

**Washington State
Coastal Zone Management
Section 309 Assessment and Strategy, 2006**

Shorelands and Environmental Assistance Program



**Washington Department of Ecology
January, 2006
Publication 06-06-001**



STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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Dear Reader:

I am pleased to present the Washington State Draft 309 Assessment and Strategy report — the fourth such assessment and strategy since 1991. This report addresses nine separate areas of coastal zone management in Washington State. This assessment will be used by the Department of Ecology to establish priorities for federal Coastal Zone Management Act section 309 funding uses for the next 3 – 5 years. Of the nine areas, one was selected as a high priority: cumulative and secondary impacts of growth. This does not mean the other areas are unimportant — it simply means we have determined that we need to emphasize continued assistance to coastal zone local governments in updating their Shoreline Master Programs.

Please remember that these priorities specifically apply only to Washington State's use of the Coastal Zone Management Act section 309 funds. They do not indicate broad priorities for the Shorelands and Environmental Assistance Program as a whole — coastal zone management is only a part of our program's responsibilities.

To those of you who provided comments on prior draft assessments, "thank you." Your comments assisted us in understanding the issues and making our choices then, as they will with this draft assessment and strategy.

Sincerely,

Gordon White, Manager
Shorelands and Environmental Assistance Program

**Washington State
Coastal Zone Management Program
Section 309 Assessment and Strategy, 4th Round**

January, 2006

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1 • Introduction

Washington is one of twenty-eight states with a federally-approved Coastal Zone Management Program under the federal Coastal Zone Management Act (CZMA) of 1972. Washington's Coastal Zone Management Program, approved in 1976, applies to the fifteen coastal counties as shown at the right.

The CZMA is administered by the Office of Ocean and Coastal Resource Management (OCRM) of the National Oceanic and Atmospheric Administration (NOAA).

The Coastal Zone Management section 309 improvement grants program was initiated by Congress in its 1990 reauthorization of the Coastal Zone Management Act (CZMA), and expanded in its 1995 reauthorization of the CZMA. Congress has set aside special funding to encourage the states to make improvements to their federally approved coastal zone management programs in one or more of nine specific improvement areas:



1. Attaining increased opportunities for **public access**, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.
2. Preventing or significantly reducing threats to life and destruction of property by eliminating development and redevelopment in **coastal high hazard areas**, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise.
3. Planning for the use of **ocean resources**.
4. Protection, restoration, or enhancement of the existing **coastal wetlands** base, or creation of new coastal wetlands.
5. Development and adoption of procedures to assess, consider, and control **cumulative and secondary impacts of coastal growth and development**, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources.
6. Reducing **marine debris** entering the Nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris.
7. Preparing and implementing **special area management plans** for important coastal areas.
8. Adoption of procedures and enforceable policies to help facilitate the **siting of energy and government facilities** which may be of greater than local significance.
9. Enhance existing procedures and planning processes for siting **marine aquaculture facilities** while maintaining current levels of coastal resource protection. (Added, 1995.)

“Program improvements” are strictly defined and limited by federal law and regulation. Program improvements are defined by the Office of Ocean and Coastal Resource Management (OCRM, 2005) to be:

1. A change to coastal zone boundaries;
2. New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
3. New or revised local coastal programs and implementing ordinances;
4. New or revised coastal land acquisition, management, and restoration programs;
5. New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
6. New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

Program implementation activities are also eligible for section 309 funding which meet the following general criteria:

1. must relate to one or more 309 program changes;
2. must be a component of the activity that measures, within two years, how it will improve effectiveness of the program; and,
3. must be cost effective.

Within these general requirements, eligible program implementation activities include:

1. administrative actions to carry out and enforce program change policies, authorities and other management techniques including the development, collection, and analysis of measurable management objectives and performance indicators;
2. equipment purchases related to the program change; and
3. allowable costs as determined in accordance with the provisions of OMB Circular A-87: Cost Principles for State and Local Governments.

Section 309 priorities do not directly determine the over-all goals of Washington’s shoreline and coastal zone management program, but rather supplement them.

Federal rules and policies for implementation of the 309 improvements program require identification of one or two (rarely or three) improvement areas in which a state will be eligible to receive grants.

Since the inception of the 309 program in 1991, Washington has worked in the three areas of [1] cumulative and secondary impacts of growth, [2] coastal hazards, and [3] special area management planning. This fourth assessment reviews progress in those three areas plus the status of the other six areas. Based on this new assessment, proposals will be made for priority areas for improvements to Washington’s coastal zone management program during the fourth 309 funding phase (2001-2005).

2 • Summary of Past 309 Efforts

There have been three “rounds,” or phases, of implementation of the section 309 improvements program: Round 1 from 1992 to 1996; Round 2 from 1996 to 2001; and Round 3 from 2001 to the present. This chapter summarizes Washington’s 309 past efforts. Greater detail is provided for Round 3. You will also notice a broad theme: greatest emphasis has been placed on aspects of updating implementation of Washington’s Shoreline Management Act in response to legislative mandates and the need to respond to increasing growth and development on Washington’s shorelines.

Round 1: 1992 – 1996

Throughout the first 309 improvement program phase, Washington State worked in two 309 improvement areas.

First, under the Cumulative and Secondary Impacts of growth improvement area, the state addressed the need to better integrate state and local government implementation of the Shoreline Management Act (SMA) of 1971 with the newly adopted Growth Management Act (GMA) of 1990 (and 1991 amendments). The results of this work were incorporated into the Shoreline Master Program Guidelines Rule adopted in December 2003.

Washington’s other focus, under the Coastal Hazards improvement area, was the Coastal Erosion Management Study (CEMS) which addressed Puget Sound coastal erosion management, the impacts of shoreline armoring, and policy alternatives to minimize the adverse effects. CEMS followed three research threads: appropriate engineering and geotechnical approaches to erosion management and bluff stabilization; the adverse environmental effects of those practices; and public policy alternatives. The results of CEMS were incorporated into the Shoreline Master Program Guidelines Rule adopted in December 2003.

Round 2: 1996 – 2001

During the second 309 improvement program phase (1996-2001), Washington State worked in three 309 improvement areas: Cumulative and Secondary Impacts; Coastal Hazards; and Special Area Management Planning.

Cumulative and Secondary Impacts

Ecology’s Growth Management Project steadily evolved to meet changing legislative mandates and local government needs. Initially the Growth Management Project was designed to respond to provisions of the Growth Management Act (GMA) of 1990 and the GMA Amendments of 1991 where there were overlapping interests with the Shoreline Management Act (SMA). By c. 2000, project emphasis shifted to a response to mandates under regulatory reform legislation and Endangered Species Act listings. Project goals, however, remained consistent: to foster consistency at the local government level between GMA-mandated comprehensive plans, development regulations, and critical areas ordinances, and SMA-mandated local shoreline master programs (SMPs)—all of which address the cumulative and secondary impacts resulting from land use practices in sensitive coastal areas.

In 1995, the Washington State legislature adopted legislation amending the SMA as a part of a broad regulatory reform effort aimed at achieving better integration of GMA, SMA, and SEPA

(State Environmental Policy Act). While not changing the broad goals of the SMA, this legislation did require amendment of all the rules for implementation of the SMA. Accordingly, the emphasis of the CZMA Section 309 Growth Management Project shifted beginning with the 1995-96 fiscal year. Throughout the 1995-97 period, the CZMA Section 309 Growth Management Project placed emphasis on amendment of the SMA implementing regulations. Accordingly, the SMP Approval and Amendment Procedures rule (WAC 173-26) and the Shoreline Management Permit and Enforcement rule (WAC 173-27) were adopted in September 1996 and the wetlands delineation manual rule was adopted in February 1997.

The proposed Shoreline Master Program Guidelines rule produced significant controversy and, as a result, these regulations were not adopted in 1997 as anticipated. Questions were raised about the proper relationship between the SMA and GMA, the content of the guidelines and extent of change from the existing guidelines. These matters were first debated by a subcommittee of the State Land Use Study Commission and subsequently by a broad based Shorelines Guidelines Commission.

While this was going on, the issue of prospective listing of certain fish species native to the state under the federal Endangered Species Act emerged. While providing some impetus for action on guidelines, this issue further complicated the task of completing the guidelines. The Guidelines Commission recommended adoption of a set of guidelines, though it was not a consensus decision of the Commission. The proposed guidelines were then submitted for formal public review and comment. Substantial comments were received in writing and in the public hearings. Based on these comments, a redrafting process was undertaken. The new draft provided two alternative approaches: (1) a more flexible, policy driven approach (Path A), and (2) a more prescriptive approach (Path B) that has been endorsed by the National Marine Fisheries Service (NMFS)¹ and US Fish and Wildlife Service (USFWS) as providing the certainty of protecting listed species of fish that they require.

This set of guidelines was released for formal public review during 2000, and subsequently adopted by the Department on November 29, 2000. The adoption of the new rules was promptly appealed to the Shorelines Hearings Board by the Association of Washington Business (joined by a coalition of business and industry associations, and some local governments). The Washington Environmental Council led a coalition which intervened on behalf of the Department of Ecology in supporting the adopted rule. (Continued in Round Three.)

Coastal Hazards

As a follow-up to the CEMS project of Round One, an inventory and characterization of alternatives to traditional shoreline armoring was carried out. Over thirty beach nourishment projects in Puget sound were documented, illustrating a wide variety of techniques. The project reporting provided the consulting community, local governments, and resource managers with information on the design and management of beach nourishment projects, and other adaptive management alternatives to armoring. The results of this work was also incorporated into the Shoreline Master Program Guidelines Rule adopted in December 2003.

¹ Subsequently renamed NOAA Fisheries.

Special Area Management Planning

As mandated in the original Grays Harbor Estuary Management Plan (GHEMP), the Grays Harbor Council of Governments (COG, formerly Grays Harbor Regional Planning) reconvened the GHEMP Task Force for a five-year plan review and update. Fundamental questions emerged regarding over-all plan value and effectiveness, while work progressed on basic plan elements. As various sections of the plan were reviewed, streamlined, and updated, major policy and regulatory shifts were surfacing from state and federal agencies which presented potentially substantive effects upon the update effort. The anticipated Endangered Species Act (ESA) listing of one or more anadromous fish species within Grays Harbor and the resulting “4d” rulings, plus the proposed amendment of the state Shoreline Management Act (SMA) guidelines for local Shoreline Master Programs (SMPs) created a problematic situation for the update. With the status, degree of impact, and timing unclear for the aforementioned efforts, continuing the GHEMP update became increasingly futile. It was decided by the Task Force to place the GHEMP update effort on hold pending clarification of impacts resulting from the ESA listings and SMA guideline amendment. The Department of Ecology concurred.

Round 3: 2001 – 2006

During the third 309 improvement program phase, Washington State worked on one Improvement Area: Cumulative and Secondary Impacts of Growth.

Cumulative and Secondary Impacts of Growth

Throughout 2000, adoption of a new rule had remained controversial, especially regarding the dual path approach. In December 2000, the Washington Association of Business (AWB) — representing a coalition of business organizations, cities, and counties) — and the Washington Aggregates and Concrete Association appealed the new guidelines rule to the Shoreline Hearings Board (SHB). The Washington Environmental Council (WEC) led an environmental coalition which intervened in support of the guidelines rule.

The Shorelines Hearings Board, in a split decision on August 27, 2001, ruled that Ecology had failed to properly conduct the rule review process and that certain provisions of Path B exceeded statutory authority. The ruling invalidated the new guidelines, but did not invalidate Ecology’s repeal of the previous rule (WAC 173-16), thus leaving the state with no shoreline master program guidelines rule. Existing local master programs remained in effect.

Quickly, parties to the original SHB appeal moved to appeal the SHB decision to Thurston County Superior Court. However, based on Ecology director Tom Fitzsimmon’s belief that mediation would be more beneficial than protracted litigation, the Governor and the Attorney General convened mediation talks aimed at reaching a negotiated settlement. Mediators were selected, the parties to the lawsuit appointed representatives, and mediated negotiations extended from early 2001 through late 2002.

By autumn 2002 a negotiated version of a new draft shoreline master program guidelines rule had been achieved, and shortly thereafter all the other necessary agreements (e.g. funding and local adoption schedules) were in place. The parties entered into a formal settlement agreement on December 20, 2002.

In January 2003, in conformance with the settlement agreement, Ecology initiated the public process for formal adoption of the negotiated settlement draft guidelines rule. In July, public

review drafts of the rule, plus the associated environmental and economic assessment documents, were released for public review and comment. Ecology responded to comments by expanding and/or clarifying the economic and environmental assessment documents, and by making minor clarifications to the rule itself. The rule was formally adopted on December 17, 2003, taking effect on January 17, 2004.

At the same time as the guidelines rule adoption process was nearing completion, the 2003 State Legislature amended the SMA to extend deadlines for local governments to update their shoreline master programs (SMPs) under the new guidelines on a sliding schedule through 2014, and appropriated \$2 million of state general fund monies for the 2003-05 biennium. The Legislature also committed to providing local governments with “reasonable and adequate” future funding through 2014, at an amount of \$4 million in each of the next biennia, until all of the SMPs had been updated.

Following adoption of the guidelines, Ecology developed and implemented a process for dispersing the funds for comprehensive SMP updates to statutorily defined “early adopter” local governments (Whatcom and Snohomish counties and the cities of Port Townsend and Bellingham) as well as eight additional “volunteer” jurisdictions.

Ecology solicited grant applications and selected 12 different local governments across the state (four counties and eight cities, half of these in the coastal zone) to receive priority funding and policy and technical assistance.

The actions of the state legislature set in motion a major new effort (with corresponding workload for Ecology and local governments) to update all 250 local SMPs across the state (about half of which are in the coastal zone) over the next decade and beyond on a seven year review cycle. In the process, Ecology is obliged to work in partnership with and support local governments as they complete their individual SMP updates consistent with new SMP guidelines requirements. This has required Ecology to prepare a wide variety of new policy and technical guidance materials, to conduct training and outreach for local government planners and their consultants, and to provide targeted guidance on acceptable methodologies for completing required shoreline inventories and analyses that form the basis for the local SMP updates.

In addition to maintaining this level of technical assistance to local governments and citizens, Ecology is now in the process of dispersing an additional \$4 million in grant funds for a new round of local government SMP updates. This level of effort is expected to continue for at least the next three biennia.

3 • Enhancement Area Assessments

The enhancement area assessments are organized according to the following prescribed format.

Enhancement Area Assessment Outline

Section 309 Programmatic Objectives

Each section begins with a quotation of the Section 309 programmatic objectives in italic typeface. These are the goals which any state must work to, at least in part, if that improvement area becomes a priority. These objectives were developed by Congress with a national perspective, and have varying applicability to specific states.

Resource Characterization

A characterization of the resource is provided according to a required format which (beginning with the second assessment) encourages brevity. Some resource characterizations have remained little changed, while some have changed substantially. Copies of the First, Second, and Third final assessment and strategy documents are available on request and on the World Wide Web:

First: http (1992): <http://www.ecy.wa.gov/biblio/0506023.html>

Second (1997): <http://www.ecy.wa.gov/biblio/9792.html>

Third (2001): <http://www.ecy.wa.gov/biblio/0106003.html>

Management Characterization

A characterization of the management program(s) for the resource are provided according to a required format. Emphasis is on changes since the prior assessment.

Conclusion

The conclusions reached express a number of considerations:

- is Washington's coastal zone management program the best and proper means of achieving success in resolving the issue?
- can the issue be resolved in the context of 309 funding requirements for legislative, regulatory, or enforceable policy approaches which also result in an "improvement" to Washington's coastal zone management program?
- are all the parties necessary to success committed to participate?
- is the over-all likelihood of success reasonably high?
- to what extent is the subject improvement area addressed by the updated Shoreline Master Program Guidelines Rule adopted in December 2003, and which will be implemented by local governments' adoption of updated shoreline master programs during the period 2004 - 2014?

Public Access

Section 309 Programmatic Objectives

1. *Improve public access through regulatory, statutory, and legal systems.*
2. *Acquire, improve, and maintain public access sites to meet current and future demand through the use of innovative funding and acquisition techniques.*
3. *Develop or enhance a Coastal Public Access Management Plan which takes into account the provision of public access to all users of coastal areas of recreational, historical, aesthetic, ecological, and cultural value.*
4. *Minimize potential adverse impacts of public access on coastal resources and private property rights through appropriate protection measures.*

Public Access Characterization

The provision of public access to rivers, lakes, and saltwater is a distributed activity in Washington State — no one agency has over-all responsibility. Public access to the shore includes features such as boat launches, beaches, shoreline trails, and observation overlooks. Washington's coastal zone management program plays only a relatively small role, and by itself provides and manages no public access facilities. Public access is provided primarily by local government park and recreation agencies, public port districts, and the state's Park and Recreation Commission. Other providers include the state departments of Fish and Wildlife, and Natural Resources, plus the National Park Service and the National Forest Service. State and local funding is provided through the Interagency Committee for Outdoor Recreation, as well as through local finding initiatives. In September 2005 the Washington State office of The Trust for Public Lands published an assessment of public access to Puget Sound shorelines which confirmed what we have been reporting since 1991.

Extent of Public Access

The extent of public access to marine shorelines as of 1985 is summarized in the table on page 10. More recent information is being compiled and could be completed by mid-to-late 2006 — too late for this assessment and strategy. Comprehensive information for lake shores and streams and rivers in the coastal zone is not known to be available.

Extensive private ownership of tidelands and shorelands in Washington State began immediately after statehood (1889) with the sale of state-owned tidelands to [1] raise money for the State Treasury, [2] enable “wharfing out” to deep water so as to encourage marine commerce, and [3] encourage and enable commercial oyster production, especially in Willapa Bay. In 1907 the Legislature directed the sale of aquatic lands in Lake Washington and Lake Union (large coastal lakes) specifically to finance the Alaska-Yukon-Pacific Exposition.² Publicly owned tidelands and shorelands were sold into private ownership on demand until the early 1970s. By 1979, only 39 percent of Washington's tidelands and 70 percent of the shorelands remained in public

² Subsequently, the exposition grounds and buildings became the nucleus of a new campus for the University of Washington, which at the time was located in down-town Seattle.

ownership. Current policy is to sell no publicly owned tidelands or shorelands into private ownership, although a lease program continues.

Based on the 1985 inventory, of Washington's 2,200 miles of inland marine shoreline, the approximately 700 sites represent about 425 miles of shoreline, or about 19 percent of that shore. Since only half that public shore has access from the uplands, the public has real access to only about 10 percent of the inland marine waters of Puget Sound.

Use and Demand for Public Access

Public use of shorelines and the demand for public access can be readily characterized from a 1996 state-wide public opinion survey (Social and Economic Sciences Research Center, 1996). Forty two percent of Washingtonians go to a shoreline at least once a month, and 80% go at least several times a year. Lakes, rivers and streams, and Puget Sound are about equally popular as "most frequently visited" while the ocean is the least frequent first choice (13%).

When asked, "Is there adequate public access to shorelines in Washington?" 63% responded "enough" and 37% "not enough." When asked what they found 'bothersome' to their shore-line visits, 75% identified "crowds," but this choice was fifth behind litter, site abuse, building development, and poor water quality.

In a 1995-96 study of boating access and access needs covering the lower 190 miles of the Columbia River (from the mouth to Dalles Dam), the researchers found that motor boaters desire additional boat launch facilities and improvements to the facilities some existing launches. Launch facilities every 10-to-12 miles along the river were considered adequate. Presently there are a total of 33 launches in the 190 miles, but their spacing and placement often exceeds the 10-to-12 mile criteria. Other desires include more transient moorage.

Additionally, the research discovered that paddle-craft boaters desire resolution of use conflicts between human-powered craft and motorboats, additional launch sites and camping facilities, and information resources such as guidebooks to paddling on the lower Columbia River.

Impediments to Provision of Public Access

Overall, the principal impediments to provision of adequate public access are considered to be:

- inadequate funding for acquisition of new sites;
- inadequate funding for maintenance of existing sites; and
- private property owner resistance to siting adjacent public facilities

Access Type	Number of Marine Sites in 1985
State, County, or Local Parks (number and acres)	Of the total of 748 listed marine public access sites, 32 are operated by federal agencies, and 716 by state, county, regional, or local agencies.
Beach or Shoreline Access Sites (number)	575 listed public access sites have a beach.
Recreational Boat Access Sites (number)	135 listed public access sites have a total of 226 boat launch ramps.
Designated Scenic Vistas or Overlook Points (number)	192 listed public access sites have a scenic view.
State or Locally Designated Perpendicular Rights-of-Way (number)	27 listed public access sites are identified as a right-of-way road end, however many dozens are known to exist.
Fishing Points (i.e. piers, jetties) (number)	68 listed public access sites have a fishing pier.
Coastal Trails and Boardwalks (number and miles)	81 listed sites have a hiking trail. No compiled information for boardwalks.
ADA Compliant Access (%)	94 listed public access sites have ADA compliant access facilities
Dune Walkovers (number)	None.
Public Beaches with Water Quality Monitoring and Public Notice (% of total beach miles) and Number Closed due to Water Quality Concerns (number of beach mile days)	In 2003 Washington State initiated a BEACH monitoring program in cooperation with US Environmental Protection Agency. In 2005 71 beaches were monitored.
Number of Existing Public Access Sites that have been Enhanced (i.e. parking, restrooms, signage)	None known.

Management Characterization

Within each of the management categories below, overall changes (both positive and negative) since the last assessment are identified. However, characterizations are difficult to make because so many federal, state, regional, and local agencies are involved in provision of public access.

Management Category	Changes Since Last Assessment
Statutory, regulatory, or legal system changes that affect public access	Positive: Adoption of updated Shoreline Master Program Guidelines rule containing additional requirements that local SMPs promote and enhance public access. A 309 change.
Acquisition programs or techniques	Moderate negative: Funding levels remain flat or diminished. Not a 309 change.
Comprehensive access management planning (including development of GIS data layers or databases)	Mixed: Comprehensive access planning is carried out at the local government level in conjunction with state-mandated general outdoor recreation planning. There is no comprehensive access plan within the Washington coastal zone management program. The BEACHES program has established a GIS-based system for water quality data reporting. The Trust for Public Lands has completed a Puget Sound access inventory. Not 309 changes.
Operation and maintenance programs	Moderate negative: Funding levels flat or diminished. Not a 309 change.
Funding sources or techniques	Day use fees at state parks resulted in reduced attendance. Not a 309 change.
Education and outreach (access guide or website, outreach initiative delivered at access sites, other education materials such as pamphlets)	Mixed: Funding levels flat or diminished, resulting in less public outreach. All major providers have more-or-less well-developed web sites. The Trust for Public Lands has initiated a public awareness campaign and program to acquire additional Puget Sound public access. Not 309 changes.
Beach water quality monitoring and/or pollution source identification and remediation programs	In 2003 Washington State initiated a BEACH monitoring program in cooperation with US Environmental Protection Agency. In 2005 71 beaches were monitored.

Conclusion

The relative amount and quality of public access in Washington state is not keeping pace with population growth or the desires of most user groups, and in some respects may be declining.

1. The major problems in addressing the programmatic objectives for public access are primarily fiscal; while the desire is there, the willingness to pay seems not to be.

- Funding programs for acquisition, maintenance, and staffing are flat or diminishing.
- There are few large, undeveloped shoreline properties available for public acquisition, and public agencies generally cannot compete financially with private interests in acquisition.

2. The prior and proposed priority for Public Access is:

2001 Assessment	This Assessment
High	High
Medium	Medium
Low	Low

3. A medium priority is proposed. This should not be interpreted as being a “moderate” importance for the problem. There is simply no foreseeable remedy to the primary problem — inadequate funding for acquisition and management — that can be addressed through Washington’s coastal zone management program. Given the existing competition for funding for other state priorities — public safety, transportation, and education — the likelihood of acquiring substantial new funding for public access is judged to be low.

Washington State proposes no new policy or regulatory directions for Public Access at this time. State level assistance to local government needs will continue be met principally from the Interagency Committee for Outdoor Recreation (IAC) and the Aquatic Lands Enhancement Account (ALEA) funds administered by the Department of Natural Resources.

From 2004 through 2014 the new Shoreline Master Program Guidelines Rule will result in modernized local Shoreline Master Programs, providing an incremental improvement to public access planning at the local government level. See Cumulative and Secondary Impacts section.

Coastal Hazards

Section 309 Programmatic Objectives

1. *Direct future public and private development and redevelopment away from hazardous areas, including the high hazard areas delineated as FEMA V-zones and areas vulnerable to inundation from sea and Great Lakes level rise.*
2. *Preserve and restore the protective functions of natural shorelines features such as beaches, dunes, and wetlands.*
3. *Prevent or minimize threats to existing populations and property from both episodic and chronic coastal hazards.*

Coastal Hazards Characterization

Washington State has approximately 2800 miles of marine shoreline, of which 2200 is located within Puget Sound and adjacent inland waters. The character of coastal hazards varies significantly between the ocean coast and the Puget Lowland, as does the nature of development and the associated risks. The general level of risk in Washington state from coastal hazards is characterized in the table below. This assessment discusses coastal hazards in four contexts: coastal flooding in general; other coastal hazards on the Pacific Ocean coast; other coastal hazards on the Puget Sound coast; and sea level rise.

General Level of Risk

The general level of risk in Washington State is summarized in the following table and discussed in the text below.

Tsunami and Seismic Risk

Tsunami and seismic risk is equally great on Washington's ocean coast and in Puget Sound. The nature, source, and frequency of the risk varies as discussed below. Washington's ocean coast shoreline is subject to tsunamis generated by both local and distant seismic events or by large coastal or submarine landslides. On-going studies indicate that the Puget Sound region is vulnerable to severe earthquakes and that these earthquakes have left a record of severe coastal impacts, including tsunamis, sudden land level changes, ground shaking and liquefaction, and major landsliding. The effect of a contemporary earthquake on coastal areas of Puget Sound, particularly in the major urban centers and port areas, would be comparable to the 1995 Magnitude 6.9 earthquake that struck Kobe, Japan. Even relatively minor earthquakes may trigger landslides on coastal bluffs or liquefaction events in developed river deltas that would have serious consequences. (Gonzales, et al., 2002.)

Similarly, the Magnitude 9.0+ Sumatra earthquake that caused devastating tsunamis on December 26, 2004 is a recent analog to the Cascadia Subduction Zone earthquakes and tsunamis that occur at approximately 500 year intervals. The Sumatran event suggests that the magnitude of the tsunami threat in the Pacific Northwest may have been significantly underestimated. The next Cascadia subduction zone earthquake has been estimated to have a 10 percent probability of occurring within the next 50 years. Catastrophic loss of life, coastal property and infrastructure would be anticipated along the low-lying barriers and estuary

shorelines in southwest Washington. Both Grays Harbor and Pacific counties have tsunami warning and evacuation programs in place.

Hazard Class	Risk Ranking	Notes
Hurricanes or Typhoons	Medium	Washington's location on the northeast Pacific Ocean precludes tropical storms, but results in exposure to intense and prolonged winter storm conditions capable of causing severe damage.
Flooding	Medium	Coastal flooding is most often a result of river flood flows reaching the coast on a high tide, especially when accompanied by high winds.
Storm Surge	Medium	See note for 'Hurricanes or Typhoons'
Episodic Shoreline Erosion	High	Episodic erosion is largely associated with the Pacific Ocean coast during El Niño winters when higher-than-normal sea levels aggravate the normal winter beach erosion cycle.
Chronic Shoreline Erosion	High	Chronic erosion is largely associated with Puget Sound where a combination of long-term sea level rise, tectonic ground subsidence, and the adverse effects of shoreline armoring lead to beach lowering and shoreline retreat.
Sea Level Rise	Medium	Long-term hazard.
Subsidence	Low to High	Washington has no near-term risk from subsidence due to groundwater or petroleum withdrawals; low rates of chronic tectonic subsidence increase the rate of sea level rise in central and south Puget Sound. Coseismic subsidence along the Pacific coast is a low frequency, but high hazard event.
Earthquakes	High	Low frequency, but high hazard.
Tsunamis	High	Low frequency, but high hazard.
Coastal Landsliding	High	Coastal landsliding is widespread along Puget Sound bluffs, and is usually associated with heavy rains and extended periods of wet weather.

Coastal Flooding

Flood-prone areas on the ocean coast include portions of the large barrier spits of the southwest coast, low-lying communities located within the estuaries, and isolated small communities located at stream mouths along the Olympic Coast. Areas most at risk within Puget Sound include sand spits and other barrier beaches and low-lying areas near river mouths. Coastal flooding occurs when winter storms coincide with high tides and is often accompanied by severe

wind and wave damage. Sea level rise will increase both the magnitude and the frequency of flooding and may lead to permanent inundation of some areas over the long-term. Coastal flooding would also be associated with infrequent near- and far-source tsunamis. Subsidence of coastal land by approximately 2 m is associated with Cascadia subduction earthquakes would result in rapid flooding of low-lying coastal land.

Pacific Ocean Coastal Hazards

Throughout the 20th century, most of the southwest Washington coast has featured an accretional trend, and erosion events were treated as localized problems. During the 1990s, however, a series of events such as chronic erosion at Cape Shoalwater, a jetty breach at Westport, El Niño-associated erosion at Point Brown leading to placement of an armored beach fill, and erosion at Cape Disappointment State Park, have increased general awareness of coastal erosion potential along the state's southwest coast. While management response to these types of events is largely localized, communities are in a much better position to make informed decisions as a result of the research of the Southwest Washington Coastal Erosion Study.

The seasonal exchange of beach sediment on the southwest Washington coast is large. These beaches lower approximately 0.5 m during the winter season and retreat horizontally between 20 and 30 m. This seasonal change is primarily due to the large winter wave climate and seasonal variability of wave direction and water levels in the Pacific Northwest. During the high wave conditions of the winter season, sediment is transported northward and offshore while during the low wave conditions of the summer season, sediment is transported back onshore and southward. As a result, the net change over the full annual cycle is small relative to the seasonal variability (Ruggiero & Voigt, 2000).

The largest wave event on record in the Pacific Northwest occurred during a La Niña winter, (3 March 1999), with deep-water significant wave heights measuring over 10 m and an associated storm surge measuring approximately 1.4 m. This major storm caused widespread erosion and flooding throughout the southwest Washington coast and destroyed ocean beach park facilities in the City of Ocean Shores (Ruggiero & Voigt, 2000).

The breach of the Grays Harbor south jetty in Westport was filled in 1994. Additionally, a number of other erosion control projects have been implemented at Westport since that time, including construction of a buried revetment in Half Moon Bay, construction of a wave diffraction mound, and beach nourishment. Coastal erosion continues to be an ongoing problem in Westport affecting public infrastructure and existing and proposed development.

Rapid erosion remains a potential problem along SR 105 in Willapa Bay and at Cape Shoalwater on the north side of the Willapa Bay entrance. In response, a large groin was constructed inside the bay in 1999 – it appears to have afforded some level of protection for SR 105. Since the late 1800s, more than 3 km of erosion has occurred at Cape Shoalwater. No measures have been undertaken to protect the residential properties at Cape Shoalwater. . A study was initiated in the mid-2000s to develop projects to reduce the effects of coastal flooding and erosion to the Shoalwater Bay Tribe's reservation located just inside Willapa Bay.

A short-term, El Niño-associated erosion cycle at Point Brown (Ocean Shores) resulted in placement of an armored beach fill in 1996 as a temporary measure to afford time for the development of a long-term solution. Since then, little progress has been made on the development of a long-term planning strategy to avoid or mitigate coastal erosion hazards, and

the armored beach fill has been covered by beach sands as a result of normal beach rebuilding processes.

Rapid erosion at Cape Disappointment State Park has forced the Washington Parks and Recreation Commission to consider relocating at least a portion of the park's campground. Research indicates that the future shoreline position may be east of the existing campground by 2009 (Kaminsky et al., 1999). Erosion during the 1990s eliminated the primary dune and affected park infrastructure, including the destruction of public restrooms, and created ongoing maintenance problems for the remaining beach access parking lot. In 2003, a study was completed to develop 25- and 40-year shoreline change predictions based on number of dredged-material management scenarios. As a result, State Parks is implementing a long-term plan for relocation of existing development and new infrastructure development landward of the 40-year worst case scenario of shoreline change.

Significant erosion problems are occurring in Wahkiakum County, especially in the areas of Puget Island and Countyline Park (on the eastern border with Cowlitz County). There is speculation, and some evidence, that ship traffic and the Corps of Engineers dredging efforts on the Columbia River contribute to the severity and incidents of erosion in this county. Also, previously installed protective measures like the sheet pilings on Puget Island may contribute to the scour effects in areas adjacent to these installation sites. A multi-agency task force continues to discuss this issue, including representatives from the offices of Washington's congressional delegation. Additionally, accretion problems exist in Grays Bay at the mouth of the Grays River. Locals believe with some documentation that the deposition of sediments here creates backwater flooding problems on the Grays River and its tributaries. It is also believed that the Corps of Engineers dredging operations creates some adverse impacts in this regard.

Another issue (which is also applicable to Puget Sound) is the V (velocity) Zone designations on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM) that identify areas subject to 100-year (1%) flood recurrence level. There is some concern that some of these areas might not appropriately reflect the risk to either a greater or lesser extent. Those areas that may be subject to lesser coastal flooding risk are the so-called "unnumbered" V Zones. There are 64 map panels in 5 counties that have unnumbered V Zones some of which are found on the Pacific Ocean coast. When these areas are re-mapped under FEMA's Map Modernization program it is possible that they may be reclassified as A Zones, not subject to significant storm surge or wave-induced flooding. Two specific areas of concern on the Pacific coast are:

1. Pacific County – Long Beach - there has been a substantial amount of accretion on the beach since the FEMA FIRMs were published in 1979 that renders them inaccurate regarding the beach width.
2. Grays Harbor County – Aberdeen and Hoquiam – these cities believe that V Zones on their maps in Grays Harbor are not warranted.

In general, changes along the southwest Washington coast can be attributed to a shoreline response to decreasing sediment supply. As the system approaches equilibrium based on a new sediment supply, it is expected that shoreline reorientation will occur throughout the region. The Southwest Washington Coastal Erosion Study is integrating research results and developing information for coastal planning, including results from a shoreline change and wave run-up models to identify problematic areas for future management consideration.

Puget Sound Coastal Hazards

Puget Sound coastal hazards are discussed in terms of erosion, erosion control, environmental impacts of armoring, landslides, and earthquakes.

Shoreline erosion affects most of Puget Sound's 2,246 miles of shoreline and includes bluff retreat and landsliding, erosion of spits and barrier beaches, and erosion of inadequately protected artificial landfill. Overall rates of erosion are relatively slow, but intensive development in eroding areas increases risks and potential losses. Erosion adversely impacts residential development, industrial sites, public recreational facilities, hazardous waste sites, and urban shorelines.

Erosion of Puget Sound shorelines has been traditionally addressed with the construction of bulkheads and seawalls and riprap revetments. Shoreline armoring extends over 30% of the Sound's shoreline (exceeding 95% along the eastern shoreline of central Puget Sound between Everett and Tacoma), and consists primarily of residential shore protection. Rates of armoring remain high in many areas, although stricter scrutiny of armoring by permit agencies has reduced the rate of new armoring in some jurisdictions, discouraging armoring where structures are at low risk from erosion and forcing greater consideration of alternative technologies.

Shoreline armoring results in a wide range of environmental impacts, including degradation of shoreline habitat, beach loss, fragmentation of riparian vegetation, and modified erosion patterns. Concern about nearshore habitat losses, particularly as they impact threatened and endangered salmon stocks, has greatly elevated public attention on armoring during the last several years and made it the focus of many regulatory and restoration based planning efforts. Emphasis has been placed on avoiding development that will require erosion control structures, restricting armoring directly, and encouraging environmentally friendly alternatives such as vegetative bank stabilization and beach nourishment.

Over 30% of Puget Sound's shoreline is subject to landsliding (Shipman, 2001a; Shipman, 2004). Landslides contributed to federal disaster declarations in early 1997, after Seattle reported damages of greater than \$30 million, a family of four was killed in their shoreline home on Bainbridge Island, and a major landslide temporarily closed the mainline of the Burlington Northern Santa Fe Railroad along the shore in south Snohomish County (Gerstel, et al., 1997). Record precipitation levels in the winter of 1998-99 led to reactivation of many very large, deep-seated landslides throughout the region, including one in Thurston County that resulted in over thirty homes being condemned. The extensive and costly damages that resulted from the 1997-1998 landslides, particularly in heavily developed areas such as Seattle, indicate that the landslide hazard is increasing with increased development, despite improvements in our understanding of landslides and strengthened development regulations in steep slope areas.

Landsliding of Puget Sound bluffs, and other steep slope areas, is largely associated with heavy winter rainfall. Landsliding is often aggravated by poor development practices, in particular those associated with land clearing and improper drainage. Landslides pose the greatest risk to sites where development has occurred near the top edge of coastal bluffs, within historically active landslide complexes, and at the toe of unstable slopes (Shipman, 2004).

As noted above in the section, Pacific Ocean Coastal Hazards, the issue of V Zone designations on FEMA's flood hazard maps is also pertinent to the Puget Sound region as well. Island County has the bulk of the map panels with unnumbered V Zones with 39 of the 64. For the most part, these areas border shorelines with bluffs and have little or no beachfront that would be subject to development. Clallam County has 13 map panels displaying unnumbered V Zones, most of

which border the Strait of Juan de Fuca which is subject to swift currents and extreme tidal influences. However, 7 of these are in the western part of the county not subject to significant development pressures. Six of these are in more protected areas in bays and harbors – Port Angeles and Dungeness harbors and Sequim Bay – and are subject to significantly more development activity. Thurston County has 7 map panels with unnumbered V Zones which are located at or near the southern terminus of Puget Sound with little or no severe wave action or tidal surges and some potential for development. Jefferson County has 3 maps with unnumbered V Zones all in the City of Port Townsend. These V Zones are water-ward of numbered V Zones, so they do not directly impact land use. Whatcom County has 2 maps with unnumbered V Zones both on Point Roberts in the Strait of Georgia. This is an area of swift currents and storm surges that deserves a detailed study. Other specific areas of concern regarding V Zone designations in the interior water are:

1. Jefferson County – Port Townsend – their mapped V Zone areas are subject to development and reconstruction of older “pre-FIRM” and historic structures that may not be easily adapted to suit V Zone building regulations.
2. Pierce County – Tacoma – the city contends that their V Zone areas should be changed to A Zones and points to the fact that neighboring King County with similar conditions has no V Zones.

Sea Level Rise

Washington State implemented a sea level rise response project from 1988 through 2002 when it was ended. Through the early 1990s studies were completed on vertical land movements as they affect sea level rise (Shipman, 1989), potential threats and policy issues (Canning, 1991), historical effects on coastal wetlands (Beale, 1991), potential future effects on coastal wetlands (carried out in conjunction with a US Environmental Protection Agency Pacific Northwest regional study (Park, Lee & Canning, 1991), policy response alternatives (Klarin, Branch, Hershman & Grant, 1990), and potential effects on the City of Olympia carried out through a grant to the City of Olympia (Craig, 1993).

Sea level rise would be moderated on Washington’s Pacific Ocean coast by upward vertical land movements of up to 2 mm/year, while sea level rise in south and central Puget Sound would be exacerbated by downward vertical land movements of up to 2 mm/year. (The relationship of vertical land movements to rates of sea level rise is poorly understood in western Washington. While a broad pattern of uplift is thought to occur throughout southwest Washington, at least a localized patch of subsidence occurs in the vicinity of the Toke Point tide gage(Morton, et al., 2002).)

The principal threat was considered to be coastal erosion, especially in the urbanizing Puget Sound basin, and a follow-up Coastal Erosion Management Strategy (CEMS) project for Puget Sound addressed erosion management techniques and technologies, adverse environmental effects of shoreline armoring, and policy alternatives (Canning & Shipman, 1995).

Risks From Inappropriate Development

Extensive residential development on and near shoreline bluffs throughout Puget Sound and at barrier beaches in southwest Washington places increasingly large numbers of homes at risk to coastal hazards such as erosion and flooding. This in turn leads to greater public investment in infrastructure in the same hazardous areas, more need for local governments to plan for natural

disasters, and higher costs at all levels of government when disasters do occur. This occurs on Puget Sound when floods and storms damage low-lying beach communities, when landslides destroy homes or require substantial public expenditures for mitigation, and when erosion threatens public facilities.

Erosion affects many recreational beaches and shoreline parks, adversely affecting public resources and reducing the quality of public access. Traditional armoring does little to restore the beach or enhance the public experience. Beach nourishment may address these issues well, but guidance to engineers, local planners, and regulators remains scarce for the small gravel beach projects typical of Puget Sound (Shipman, 2001b).

The wide-spread use of seawalls and bulkheads to address shoreline erosion on Puget Sound leads to significant adverse effects on beaches and nearshore ecology. Armoring can eliminate sources of sediment, lowering and narrowing downdrift beaches and further aggravating erosion else-where. Armoring can also lead to changes in beach substrate, beach hydrology, and riparian vegetation, thereby harming nearshore and adjacent upland habitat. Such shoreline structures often allow development to occur closer to the shore than otherwise would be acceptable, increasing adverse impacts on water quality, native shoreline vegetation, and aesthetics.

On Washington's southwest coast, the temporary shift along some shoreline segments from an accretional to an erosional state during the El Niño events in the late 1990s placed some public and private development at risk. For the most part, current laws and regulations prohibit or discourage erosion control structures on the Pacific Ocean beaches.

As noted earlier, V Zone areas as designated on FEMA's flood hazard maps can be an issue because of the more restrictive development and building standards required in those areas. While some local jurisdictions argue for re-designation as A Zones in many of the areas described above, some of these areas may see expansion of V Zones with new more detailed engineering studies providing a more accurate portrayal of the flood hazard.

The substantial tsunami threat on the Pacific Ocean coast is a complex issue that has been traditionally handled through public education programs, evacuation planning, emergency preparedness and response plans. However, the risks from inappropriate development are escalating because community planning, land-use development, and the locating of critical facilities and lifeline infrastructure are not sufficiently integrated with tsunami hazard maps and information that characterizes the tsunami threat, such as velocity flow, or the effects of earthquakes. Ground shaking will cause significant building damage and many ground failures, as well as liquefaction, subsidence and rapid flooding. The risks from a subduction-zone earthquake and tsunami are high in many coastal communities because the landscape and present development patterns make it impossible to evacuate to high ground or out of harms way within the short time allotted (less than 20-30 minutes).

Management Characterization

Changes to Washington State's hazard protection programs since the last assessment are summarized in the following table and discussed in the text below. All changes reflected in the table are the result of 309-funded projects carried out since 1992 (except as noted).

Coastal Flooding

There have been no state-initiated changes in policies or management regimes since the last assessment. However, a major federal initiative, FEMA's Map Modernization program, will

have significant impact by updating the existing flood hazard maps which may include revised and expanded geographic areas identified as being subject to flooding risks from coastal and other sources. Nationally, FEMA has worked with the U.S. Army Corps of Engineers, other federal agencies, and engineering consulting firms to develop a new methodology for delineating coastal flood hazard areas that is more applicable to the astronomical and geophysical situations common to the Pacific than that used to produce the original maps. When these areas are re-mapped the resulting products should more accurately portray the hazards created by impacts from tide levels, storm surge, and wave set-up and run-up. It will also be available in digital format expediting use by local governments. This project will have revised flood hazard maps available for Puget Sound and coastal communities during federal fiscal years 2006 through 2009 with the Puget Sound areas re-mapped earlier.

Another federal initiative is the National Flood Insurance Program's (NFIP) Community Ratings System (CRS). This program provides credit to coastal (and non-coastal) communities that have established higher regulatory standards or administrative and operational procedures that could help reduce risks and potential flood damages. These credits lead to lower flood insurance rates for citizens within those jurisdictions. Communities that have addressed the tsunami hazard also receive special credits through the CRS. Warning systems and public awareness and educational programs in addition to more restrictive development and building regulations should lead to fewer structures being at risk and greater safety for residents of these areas. FEMA and NOAA have worked together on designating "Tsunami Ready" and "Storm Ready" communities that meet certain standards. Clallam County, the cities of Long Beach and Ocean Shores and the Quinault Indian Nation have achieved both designations while the coastal counties King, Pierce, Skagit, Snohomish, and Whatcom and the City of Seattle have attained Storm Ready status.

Pacific Ocean Coastal Hazards

In an attempt to begin addressing some of the coastal hazard issues, especially coastal erosion, in 1998 Governor Gary Locke directed the Department of Community, Trade, and Economic Development to create a Coastal Erosion Task Force³. Governor Locke's directive arose, in part, when it became apparent that some of the parties were in disagreement regarding appropriate policy responses to the threats of coastal erosion. The Task Force's assignment was to develop short- and long-term policy recommendations on coastal erosion management. The Task Force, in March 1999, completed its work and delivered to the Governor a final report with 22 specific policy recommendations. However, a clear consensus was not reached. A majority of the local governments submitted a "Minority Report and Dissent" to the Governor which indicated that while they were in general concurrence with many of the recommendations they had substantive concerns with matters of definition, and had reservations about loss of local control. The Governor's Office has taken no follow-up action on either the Task Force's Final Report or the local governments' Minority Report and Dissent.

Puget Sound Coastal Hazards

Concerns about the environmental impacts of armoring have increased since the Coastal Erosion Management Studies were carried out early in the 1990s. Additional studies have expanded our

³ The Task Force was composed of representatives of local, state, federal, and tribal government agencies; public port districts; non-governmental organizations; and citizens.

knowledge of the extent of armoring on the Sound and have identified potential links between armoring and ecological health.

In addition, biologists are increasingly noting the critical relationship between geomorphological processes and the distribution and health of nearshore habitats. More is known about the dependence of eelgrass and fish spawning on sediment type and substrate dynamics. Similarly, studies are indicating that riparian vegetation and organic debris, both closely tied to erosion and geomorphic processes, play a key role in the shoreline ecosystem. Active research projects are underway to better identify the connections between geomorphology and ecological processes along Puget Sound.

Experience during the late 1990s has confirmed that landsliding remains a major coastal hazard on Puget Sound. The extent and concentration of damages suggests that landslide losses are likely to increase in the future. In addition, scientific work on historic and prehistoric landslides has greatly increased assessments of the risk to coastal Puget Sound from catastrophic earthquakes (Johnson, et al., 1999).

Development pressure is increasing along unstable and eroding shorelines. The level of development, and the corresponding risk, in many areas is much higher as a result of conversion of small vacation properties to large, year round residences. The high value of shoreline property increasingly allows sophisticated engineering measures to be constructed that in turn result in much greater environmental impacts than previously.

The problem is well illustrated by the City of Seattle, which despite relatively strict development regulations and considerable awareness of landslide risks, still suffered the highest landslide losses of any community in the 1996-97 disaster. Rapid development into unstable areas offsets gains in better regulations, emphasizing the need to examine carefully development policies in other, still fairly rural areas.

Sea Level Rise

The Department of Ecology's sea level rise response program was ended in 2002 when other program priorities were deemed more important. Limited technical assistance is provided on request.

Mechanism	Changes since Last Assessment
Building setbacks/restrictions	Yes: the Shoreline Master Program Guidelines Rule (SMPGR) adopted in December 2003 provides for new restrictions on the placement of structures in hazard areas. A 309 change.
Methodologies for determining setbacks	No.
Repair or rebuilding restrictions	Yes: the SMPGR (December 2003) provides for new restrictions on the repair or rebuilding of structures in hazard areas. A 309 change.
Restrict “hard” shoreline protection structures	Yes: the SMPGR (December 2003) provides for new restrictions on the placement of shoreline armoring. A 309 change.
Promotion of alternative shoreline stabilization methodologies	Yes: the SMPGR (December 2003) encourages alternatives to traditional shoreline armoring. A 309 change.
Renovation of shoreline protection structures	Yes: the SMPGR (December 2003) provides for new restrictions on the repair and renovation of shoreline armoring. A 309 change.
Beach or dune protection	Yes: the SMPGR (December 2003) provides for new standards for dune management. A 309 change.
Permit compliance program	No changes.
Inlet management plans	No changes.
Special Area Management Plans	No changes.
Local hazards mitigation planning	Moderate positive: local communities continue to complete or amend their Comprehensive Flood Hazard Management Plans. Not a 309 change.
Local post-disaster redevelopment plans	No changes.
Real estate sales disclosure requirements	No changes.
Restrictions on publicly funded infrastructure	No changes.
Public education and outreach	No changes.
Mapping/GIS/tracking of hazard areas	Improved identification of tsunami risk zones Not a 309 change.

Conclusions

1. Section 309 programmatic objectives include directing development away from hazardous areas and preserving or restoring the protective functions of natural shorelines.

Directing new development away from hazardous areas is problematic because: [1] the high value of shoreline property increases resistance to land use restrictions; [2] the public awareness of the nature and severity of coastal hazards is often low; [3] some coastal residents take a short-term view of the situation or assert they are willing to assume the risk, and [4] it is not easy for the public to access information on coastal hazards.⁴

2. The prior and proposed priority for Coastal Hazards is:

2001 Assessment	This Assessment
High	High
Medium	Medium
Low	Low

3. Coastal hazards, along with issues associated with the environmental consequences of hazard mitigation, remain an important issue affecting the long-term development of Washington's shoreline. This assessment area is inextricably linked to the issue of secondary and cumulative impacts of growth, because it relates to both the direct modification of the shoreline and to the proximity to the shore at which development occurs.

We ranked coastal hazards as a high priority in 1992, 1997, and 2001, and considerable progress was made during those phases. The resulting technical and policy studies have been incorporated into the Shoreline Master Program Guidelines rule amendment adopted in December 2003. Still, work remains to be done, especially in the area of Pacific Ocean tsunami hazards, dredged material management, beach nourishment and beach erosion management in general.

During the Fourth Round of Section 309 Improvements, needed progress in addressing coastal hazards will be conducted through the updating of local Shoreline Master Programs – see Cumulative and Secondary Effects of Growth improvement area.

⁴ Beginning in 1999 the Shorelands and Environmental Assistance Program began a long-term project to place difficult-to-obtain and out-of-print materials on the Department of Ecology web site. As of late 2000, much of the Southwest Washington Coastal Erosion Study results have been made available (<http://www.ecy.wa.gov/programs/sea/swce/index.html>), along with Shorelands' library of aerial oblique photographs of the state's marine shorelines (<http://www.ecy.wa.gov/apps/shorephotos/>). Newly available is Puget Sound marine shoreline slope stability mapping from the mid-1970s Coastal Zone Atlas of Washington (<http://www.ecy.wa.gov/programs/sea/landslides/index.html>).

Ocean Resources

Section 309 Programmatic Objectives

1. *Develop and enhance regulatory, planning, and intra-governmental coordination mechanisms to provide meaningful state participation in ocean resource management and decision-making processes.*
2. *Where necessary and appropriate, develop a comprehensive ocean resource management plan that provides for the balanced use and development of ocean resources, coordination of existing authorities, and minimization of use conflicts. These plans should consider, where appropriate, the effects of activities and uses on threatened and endangered species and their critical habitats.*

Resource Characterization

Introduction

A crucial distinction between Washington State and most other coastal states is that Washington has a vast “inland sea,” Puget Sound, in addition to its ocean coast. The majority of the State’s population resides in the Puget Sound area, thus attention and resources are often focused on the Puget Sound Region.

Still, the Pacific Ocean region is an important area in the state’s coastal zone. The Olympic National Park; the Flattery Rocks, Quileute Needles, and Copalis national wildlife refuges; and the Olympic Coast National Marine Sanctuary all speak to the coast’s national significance. Six Indian tribes have reservations on the coast: the Makah, Ozette, Hoh, Quileute, Quinault, and Shoalwater. The nationally-designated areas, coupled with tribal reservation land, occupy almost two-thirds of Washington’s Pacific Coastline. These areas are relatively undisturbed and undeveloped, and largely outside the State’s jurisdiction.

The southerly third of the Pacific coastal region includes Grays Harbor, Willapa Bay, and the Columbia River estuary. These areas are the focus of attention at the federal, state, and local levels through efforts such as the Grays Harbor Estuary Management Plan (GHEMP), the local Willapa Water Quality Council, and the Columbia River estuary program sponsored by the US Environmental Protection Agency. The GHEMP is the only formal special area management plan (SAMP) adopted as a part of Washington’s coastal zone management program.

In light of the focus on the Puget Sound and the relatively undeveloped and protected status of much of the Pacific Coast, Washington State has never targeted resources at development of a ocean resources management plan.⁵ Various state agencies operate pursuant to specific legislative and administrative mandates which address ocean issues. The Department of Ecology administers the Shoreline Management Act, which gives the local coastal governments’ Shoreline Master Programs jurisdiction out to three miles.

In 2000, Congress passed the Oceans Act which mandated a US Commission on Ocean Policy (USCOP) to research and assess the state of the oceans and to recommend comprehensive ocean

⁵ The Washington legislature adopted the Ocean Resources Management Act (ORMA) in response to potential oil and gas drilling along Washington’s coast. ORMA is used in consistency determinations.

policies which might be adopted. In September 2004 the USCOP issued their final report (USCOP, 2004).

Subsequently the Washington Legislature authorized a Washington State Ocean Policy Initiative, and an Ocean Policy Work Group has been convened to review the USCOP report, evaluate the condition of the states ocean resources, and make recommendations for improving ocean management. The Legislature also provided for a Budget Proviso in the 2005-2007 state operating budget provided funding for the Governor's Office and three state agencies (Ecology, Fish and Wildlife, and Natural Resources) to complete the following:

- By December 31, 2005, identify the recommendations of the U.S. commission on ocean policy appropriate for immediate implementation.
- By December 31, 2006, provide a report:
 - a. Summarizing the condition of the state's ocean resources and their contribution to the state's character, quality of life, and economic viability
 - b. Recommending improvements in coordination among state agencies and other jurisdictions
 - c. Recommending measures to protect and manage ocean resources
 - d. Recommending measures to finance ocean protection, management, and development programs
 - e. Recommending legislation regarding ocean resources or policy

The Office of the Governor convened a workgroup with representatives from the state legislature, state agencies, tribes, local governments, and ports. In addition, the Office of the Governor has contracted with Professor Marc Hershman of the University of Washington's School of Marine Affairs. (Dr. Hershman was a member of the U.S. Commission on Ocean Policy. He and a group of graduate students will be providing research and technical assistance to the Ocean Policy Work Group.)

The phase one report, *Action for Washington's Ocean: Initial Steps to Enhance Management of Washington State's Ocean and Outer Coasts* (Ocean Policy Work Group, 2005) was released in December 2005. The report simply presents the "...activities, initial findings, and early action recommendations of the Washington State Ocean Policy Work Group (OPWG)." Substantive recommendations will be forthcoming in the December 2006 final report.

At present, there seems to be no allowable opportunity for application of CZM Section 309 funding for implementation of Washington's ocean policy initiative.

Resource Characterization

1. Pacific Ocean resources and uses of state concern are characterized in the table below:

Resource or Use	Threat or Conflict	Degree of Threat (H/M/L)	Anticipated Threat or Conflict
Shipping and Transportation	Oil & hazardous waste spills. Increased vessel traffic off the coast increases the potential for spills.	Medium overall; High if current state measures are undermined by federal action.	Oil spills can be locally devastating to coastal resources. Oil spills pollute the water, foul birds and marine mammals, wash up on shorelines.
Fisheries	Pollution, over-fishing, and unknown causes have resulted in a dramatic reduction of certain Pacific species.	Medium	Depletion of fisheries stocks can have devastating effects on other marine species and on coastal economies.
Petroleum and Natural Gas	Oil and gas development can have potentially devastating effects on the coastal environment.	Low	The US Department of Interior's Proposed Final Outer Continental Shelf Oil and Gas Leasing Program for 1997-2002 does not include Washington's coast. No lease sales are scheduled for any time in the future.
Water Quality	Bacterial contamination of coastal embayments and beaches by failing on-site sewage systems or point discharges from sewage treatment plants (STPs).	Low overall; medium locally.	While the Pacific Coastal waters are relatively pristine, some nearshore areas have been subject to shellfish harvest closures for the recreational Razor Clam harvest.

2. The State law that prohibits off shore oil and gas development, the 1989 Ocean Resources Management Act (ORMA), was amended in 1997 to extend the moratorium in perpetuity.

Management Characterization

1. State ocean management programs and initiatives developed since the last assessment are summarized in the table below:

Program	Status	309 \$
Statewide comprehensive ocean management statute	No change.	No.
Statewide comprehensive ocean management plan or system of Marine Protected Areas	A system of Marine Protected Areas has been established in northern Puget Sound; not a 309 change.	No.
Single purpose statutes related to ocean resources	No change.	No.
Statewide ocean resources planning/working groups	Washington Ocean Policy Work Group initiated..	No.
Regional ocean resources planning efforts	No change	No.
Ocean resources mapping or information system	No change.	No.
Dredged material management planning	Columbia River Estuary	No.
Habitat research, assessment, monitoring	No change.	No.
Public education and outreach efforts	No change.	No.

Conclusion

1. Considering the mandate and on-going activities of the Washington State Ocean Policy Initiative, and the Ocean Policy Work Group, it would be premature and inappropriate to suggest any ocean resources actions under the CZMA Section 309 program. However, it is deemed appropriate to raise the priority for this sector from low to medium.

2. The prior and proposed priorities for this improvement area are:

1997 Assessment

High

Medium

Low

This Assessment

High

Medium

Low

3. Until Washington's ocean policy work group has completed its assignment and the Legislature has reviewed and acted on that report, it would be premature to suggest any action on the ocean resources improvement area.

Wetlands

Section 309 Programmatic Objectives

1. *Protect and preserve existing levels of wetlands, as measured by acreage and functions, from direct, indirect and cumulative adverse impacts, by developing or improving regulatory programs.*
2. *Increase acres and associated functions (e.g., fish and wildlife habitat, water quality protection, flood protection) of restored of wetlands, including restoration and monitoring of habitat for threatened and endangered species.*
3. *Utilize non-regulatory and innovative techniques to provide for the protection and acquisition of coastal wetlands.*
4. *Develop and improve wetlands creation programs.*

Resource Characterization

1. Extent of coastal wetlands:

Wetlands Type	Extent (acres, year of data)	Trends (acres per year)
Tidal	202,000 acres, 1988	Loss rate is estimated to be 700 to 2000 acres per year for all types combined.
Non-tidal	No data	
Freshwater	709,000 acres, 1988	
Other marine	27,000 acres, 1988	
Restored Wetlands	No reliable data.	No reliable data.
Created Wetlands	No reliable data.	No reliable data.

According to a 1988 US Fish and Wildlife Service (USFWS) inventory, wetlands cover about 939,000 acres in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990). Palustrine wetlands cover about 709,000 acres, about 75 percent of the total wetland acreage in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990). These wetlands exist throughout the State in coastal sand dunes; in lowlands adjacent to estuaries, rivers, and lakes; in the backwaters of reservoirs and irrigation wasteways; adjacent to springs or seeps; and in isolated depressions. Extensive tracts of palustrine wetlands cover the sand spits of Grays Harbor and Willapa Bay and the banks of the Columbia, Chehalis, Yakima, and Pend Oreille Rivers (Canning and Stevens, 1989).

Palustrine forested wetlands commonly are referred to as swamps or coastal swamps. Palustrine scrub-shrub wetlands commonly are referred to as swamps or bogs. Palustrine emergent wetlands are also known as freshwater marshes, wet meadows, fens, bogs, prairies, potholes, vernal pools, and playas (Canning and Stevens, 1989).

Lacustrine wetland acreage in Washington is not addressed in this summary because the acreage has not yet been separated from the acreage for lacustrine deepwater habitat (D.D. Peters, U.S.

Fish and Wildlife Service, unpub. data, 1990). Lacustrine emergent wetlands and aquatic beds exist in the shallows of lakes throughout Washington (Canning and Stevens, 1989).

Riverine wetlands cover about 700 acres in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990) and consist of the areas of river channels that are occasionally to permanently flooded. These areas can be nonvegetated or vegetated by submersed and nonpersistent emergent aquatic plants. Areas of the river channel that typically are exposed commonly are referred to as river bars, gravel bars, or unconsolidated shorelines. (Canning and Stevens, 1989).

Estuarine wetlands cover about 202,000 acres, about 22 percent of the total wetland acreage in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990). These wetlands are present on the deltas and in the lower reaches of most of the rivers in western Washington (the part of the State west of the crest of the Cascade Range). Broad expanses of estuarine wetlands exist around Grays Harbor and Willapa Bay on the coast, at the mouth of the Columbia River, and around Skagit and Padilla Bays on Puget Sound (Canning and Stevens, 1989).

Marine wetlands cover about 27,000 acres, about 3 percent of the total wetland acreage in Washington (D.D. Peters, U.S. Fish and Wildlife Service, unpub. data, 1990) and consist of beaches and rocky shores. The high-energy tidal environment of these wetlands keeps them unvegetated except for algae. Marine wetlands exist along the Pacific coast and the Strait of Juan de Fuca, on some offshore rocky islands, and in the San Juan Islands (Canning and Stevens, 1989).

Trends

Estimates of presettlement wetland acreage in Washington range from 1.17 to 1.53 million acres, depending on the historical information and research assumptions used (Canning and Stevens, 1989; Dahl, 1990). Based on a 1988 estimate by the USFWS, about 20 to 39 percent of Washington's wetlands, had been lost during the past two centuries. Other estimates place the total loss as great as 50 percent, and some urbanized areas of the Puget Sound area have experienced losses of 70 to 100 percent. Estimates of continuing wetland loss range from 700 to 2,000 acres per year. In addition, most of the State's remaining wetlands have been significantly degraded.

Good data on the current extent of Washington's wetlands remains limited. While some small, local inventories by small cities have been completed in the last five years, there has been no comprehensive work generating or compiling wetland inventory data since the National Wetland Inventory was completed in the early 1980's.

The principal historical causes of wetland loss and degradation are the expansion of agriculture and the siting of ports and industrial facilities. The major causes of continuing loss and degradation of wetlands are urban expansion, forestry and agricultural practices, and the invasion of exotic plants and animals (Canning and Stevens, 1989).

The data indicate an ongoing pressure on wetlands, with many of the losses being small in acreage and exempt from mitigation requirements. Furthermore, wetland impacts that are mitigated are often not mitigated adequately. The results from several studies to assess the success of mitigation were disheartening. About two-thirds of the mitigation projects visited were not, or have not, met their performance standards; nor are they replacing the wetland functions lost to impacts.

2. Direct and indirect threats to coastal wetlands, both natural and man-made are summarized the table below:

Threat	Significance
Development and/or fill	High: development remains the greatest threat to wetlands.
Alteration of water regime	High: wetlands can dry up or be subject to excess flooding.
Erosion	Low: shoreline erosion is of little importance as a threat to most vegetated coastal wetlands; however, see sea level rise.
Pollution	Medium: nonpoint pollution degrades wetlands in all regions of the state.
Channelization	Low: stream channelization is rarely practiced in the state today. Much of the channelization was done during the early part of the century.
Nuisance or exotic species	High: <i>Spartina</i> infestations in Puget Sound are locally of high significance.
Freshwater input to marine or estuarine systems	Low: freshwater input is not an issue in Washington state.
Sea level rise	Medium to High: long term threat

Development

Development continues to be the major threat to wetlands in the coastal zone of Washington State. We continue to see fragmentation of wetland systems from urban sprawl, degradation of wetlands and their buffers from encroaching development, and changes in hydroperiods from development in the watershed. Some impediments to addressing this threat continue to be expanding population pressures, complicated technical and regulatory issues, and a public with mixed opinion on the value or necessity of preserving wetlands and their buffers at the expense of personal economic gain.

Washington does not have a comprehensive law for protecting or regulating development in wetlands. The Department of Ecology issues 401 Water Quality Certifications for wetland impacts requiring a federal 404 permit and also co-administers the Shoreline Management Act (SMA) with local governments. However, the SMA does not have jurisdiction over isolated, freshwater wetlands in the coastal zone. The primary land use regulation in Washington lies with local governments. While the Growth Management Act (GMA) requires that local governments "designate and protect" wetlands, it does not provide specific standards for how to do so. As a result, many local wetland regulations are inadequate to protect wetlands.

Additionally, local governments often lack the necessary information and technical training to protect wetlands based on the functions and the values they represent. Recent revisions to the GMA and the rules for implementing the SMA specify that local governments must include the best available science in their wetland regulations. However, this information is not widely

available to local governments, or is not available in a form that can easily be understood and used. The Department of Ecology has now developed guidance for local governments on how to protect wetlands using “best available science” as required by state law (RCW 36.70A.172). This guidance is in the form of a report synthesizing scientific information about wetlands (Ecology publication 05-06-006); a report providing guidance on how to develop regulations to manage wetlands (Ecology publication 05-06-008); and a wetland rating system for eastern and western Washington (Ecology publications 04-06-15 and 04-06-025). The need is now to disseminate this information and provide training to local governments on how to use this information.

The review of scientific information indicates that the long-term protection and restoration of wetland resources in Washington will require changes in our current approach. The “project by project” review of wetland impacts through regulatory processes has caused our wetland protection strategy to be principally focused at a site-specific level, despite the fact that processes operating at a landscape level often control and define the type of wetlands that occur within that watershed (Bedford 1996). The emphasis on site-specific management has resulted in a focus on creating, or re-creating, the structure in wetlands. Today, however, there is a need to shift from re-establishing the physical structure in damaged wetlands to restoring ecological processes and functions, particularly those perceived as ecosystem services (Cairns, 2000). An emphasis on protecting and restoring wetland functions demands a different approach because many functions are a reflection of environmental processes that occur at a landscape scale.

Pollution

Pollution is also a threat to Washington’s coastal wetlands. Discharges of materials, primarily from nonpoint sources, continue to degrade wetlands and impair their functional capabilities. Pesticides, herbicides, heavy metals, nutrients, and sediments and other pollutants find their way into wetlands throughout the coastal region. There are many impediments to solving nonpoint pollution problems, many of which are being addressed as Washington develops its Nonpoint Pollution Strategy.

Nuisance or exotic species

Nuisance and exotic species are a problem in both freshwater wetlands (primarily Purple Loosestrife and Reed Canary Grass), and estuaries (*Spartina* spp). The primary impediment to addressing these problems is the biology of the plants themselves. They are aggressive and very hard to eradicate.

There are three species of *Spartina* in Washington: *S. alterniflora*, *S. angelica*, and *S. patens*. *Spartina* is a problem in Pacific Northwest estuaries as it invades mudflats, starting high in the intertidal and accreting sediments. Through sediment accretion, seed production, and vegetative spread, the plant can invade mudflat areas rapidly. These species were accidentally introduced to Willapa Bay in the 1890s. They were also planted intentionally in Willapa Bay and various locations in Puget Sound for erosion control, cattle forage, or duck hunting blinds. As invasive species, *Spartina* displace benthic organisms and shorebirds, and eliminates the mudflat habitat necessary to oyster culture. In some places it can contribute to flooding by impeding water flow out of coastal rivers.

The Washington Department of Agriculture is coordinating *Spartina* control efforts in the state, and is aided by the Washington departments of Natural Resources and Ecology, the US Fish and Wildlife Service, and local weed control boards. Funding is limited, inventories are incomplete, and unaffected areas need to be monitored for early detection and response. Control efforts have

been focused in Willapa Bay where the infestation began, and in recent years have been initiated in Puget Sound embayments.

Management Characterization

Management Category	Changes since last assessment
Regulatory program	Positive, through development of regulatory guidance using “best available science” (Not a 309 change), plus adoption of new Shoreline Master Program Guidelines rule (A 309 change).
Wetlands protection policies and standards	Significant positive, through adoption by local governments of our BAS recommendations. As of Sept. 1, 2005, 35 out of 42 jurisdictions who have adopted revisions to their Critical Areas Ordinances have adopted Ecology’s revised rating system. Not a 309 change.
Assessment methodologies (health, function, extent)	Significant positive, through revisions to the wetland rating system. Not a 309 change.
Impact Analysis	Significant positive through the completion of two studies on the success of wetland mitigation. Not a 309 change.
Restoration and/or enhancement programs	No changes.
Special Area Management Plans	No changes.
Education/outreach	Significant positive through the development and delivery of a training program for the wetland rating system. Not a 309 change.
Wetlands creation programs	No changes.
Mitigation banking	Significant positive through the development of a mitigation banking pilot project to test the effectiveness of the proposed mitigation banking rule. Not a 309 change.
Mapping/GIS/tracking systems	No changes.
Acquisition programs	Moderate positive, through the Washington Wildlife and Recreation Program and other state and local programs. Not a 309 change.
Publicly funded infrastructure restrictions	No changes.

A new area of emphasis for the state has been to develop technical and scientific guidance on wetlands to local governments as they update their Shoreline Master Programs and Critical Area

Ordinances. This need has been driven by the fact that local governments do not have the necessary technical and scientific expertise to update their regulations using “best available science” as specified in state law.

An additional new area of emphasis for the state has been to improve the success of wetland compensatory mitigation. Our continuing high growth rate in the state has resulted in continuing unavoidable wetland impacts from infrastructure development and increased residential, commercial and industrial development. Despite an emphasis on avoiding wetland impacts, significant unavoidable impacts to wetlands continue. Thus, we must continue to improve on our ability to create, restore and enhance wetlands to offset the losses. Two recent programs have been developed to assist with this:

1. Development of a wetland mitigation banking pilot project that establish several large-scale wetland restoration projects to be used to compensate for certain unavoidable wetland impacts.
2. The other program is the development of a compliance tracking program to help ensure the success of future mitigation projects. We have started developing a new compliance tracking program to enable us to ensure that current and future projects are successfully completed.

Finally, the adoption in December 2003 of the new Shoreline Master Program Guidelines rule incorporates a matrix of provisions regarding wetlands, critical salt water habitats, critical fresh water habitats, and shoreline vegetation conservation which, taken together, and in concert with the Guidelines’ emphasis of no net loss of existing ecological functions, is expected to result in a reduction of the rate of loss and degradation of wetlands.

Conclusion

1. Identify major gaps in addressing the programmatic objectives for this enhancement area.

The Department of Ecology has been working to introduce a broader landscape approach for managing wetlands. Projects that are ongoing, or that have been completed, include Volume 1 and 2 of the “best available science” for managing wetlands; revisions to the rating system for eastern and western Washington, a document providing guidance on wetland mitigation (written in conjunction with the Army Corps of Engineers and EPA); and a Wetland Mitigation Banking Pilot Project.

There are, however, several key components missing from Ecology’s existing wetland programs that are limiting the state’s ability to effectively manage and regulate wetlands at a landscape scale. The following key components of an effective program are still missing and form the basis of the strategies for future actions.

- Tools for translating landscape information into procedures that can routinely be used in making decisions about wetlands at the local level. We need to develop processes for translating technical information about specific watersheds (such as profiles, current levels of function, assessment of cumulative impacts, or the current status of ecological integrity) into a form that can be easily and directly used by local wetland regulators on a site-specific basis. These tools would help change the focus from site-specific mitigation to a broader landscape scale focus.
- Watershed profiles of wetland types, hydrologic processes, and “stressors”. Watershed profiles provide a hydrologic portrait of the wetlands in the landscape as it is now and might be in the future. Profiles of wetland geomorphic types and hydrologic processes are one of

the tools that can be used to re-direct the management and regulation of wetlands to a broader scale. Local governments are not in a position to develop these profiles because watersheds often encompass several local jurisdictions.

- Function assessment methods for estuarine and slope wetlands in the lowlands of western Washington. Local governments often lack the necessary information and technical training to protect wetlands based on the functions and the values they represent. Function assessment methods provide a scientifically based method for assessing functions in a relatively accurate manner. Estuarine and slope wetlands have been identified as the wetland types most under threat for which methods have not yet been developed.
- Training for local governments on how to use and apply the information developed from “best available science.”

3. Briefly justify the proposed priority.

2001 Assessment

High

Medium

Low

This Assessment

High

Medium

Low

We continue to be at a critical point in wetlands protection in Washington. Changes in the Growth Management Act and the Shoreline Management Act regulations have created an opportunity to significantly affect local wetland protection regulations. Local governments are mandated to revise both their wetland regulations and their shoreline master programs during the next five years. Some have already done so, but many still are preparing drafts. The department of Ecology is in a position to provide good technical and scientific information to these jurisdiction to improve wetland protection and restoration.

Additionally, increased attention is being focused on watershed planning and restoration. As more communities are involved in watershed-scale planning and restoration activities it is important for Ecology to provide leadership in how to incorporate wetland protection into these activities. Our increasing understanding of watershed-scale processes has shown us that we need to shift our focus from a strictly site-specific protection approach to include measures which address the larger-scale processes that drive wetland functions.

During the Fourth Round of Section 309 Improvements, needed progress in addressing wetlands will be conducted through the updating of local Shoreline Master Programs – see Cumulative and Secondary Effects of Growth improvement area.

Cumulative and Secondary Impacts

Section 309 Programmatic Objectives

1. *Develop, revise or enhance procedures or policies to provide cumulative and secondary impact controls.*

Resource Characterization

Areas in the coastal zone where rapid growth or changes in land use require improved management of CSIs remain largely unchanged from the 1992 and 1997 Assessment and Strategy reports: the Puget Sound counties, especially Mason, Thurston, Pierce, Kitsap, and King. The primary type of growth affecting the Puget Sound counties is population growth leading to residential and associated commercial, industrial and public facility development. This development has secondary impacts of habitat loss, water quality degradation, increased frequency and magnitude of flooding, and demand for infrastructure improvements or expansions. This latter category includes transportation, education, water supply, sewage disposal, and public access facilities.

The areas in the coastal zone which possess sensitive coastal resources, and require a greater degree of protection from the cumulative or secondary impacts of growth are largely unchanged from the 1992 and 1997 Assessment and Strategy reports. However, there is substantially heightened awareness of habitat loss and degradation as significant contributing factors in the decline of certain fish populations in the state leading to listing of some species under the Endangered Species Act. The following table summarizes the issues. Additional information is contained in the 1992 and 1997 Assessment and Strategy reports.

Management Characterization

Significant changes in the state's ability to address cumulative and secondary impacts of growth on shoreline resources has recently occurred as a result of adoption of the amended Shoreline Master Program Guidelines in December 2003. These guidelines will direct the updating of every local shoreline master program in the Coastal Zone. The timeline for completing this effort statewide, as established in statute, runs through 2014. However, most (but not all) jurisdictions in the coastal zone have deadlines for update of their shoreline master programs (SMPs) earlier in the process.

The guidelines require local government to inventory the resources and existing conditions of their shorelines and address the direct and cumulative impacts of development on the shorelines in a manner that preserves and restores the natural character of the shoreline.

When local governments conduct their required comprehensive SMP updates they must demonstrate how their SMP satisfies new guidelines requirements. Key features of the new guidelines require :

1. Coordination amongst neighboring shoreline jurisdictions, tribes, and other state resource agencies for the purpose of efficient use of funds, sharing of information and methods of analysis, drafting of compatible SMP policies, regulations environment designations, and coordination of public involvement.
2. Inventory of current shoreline conditions

3. Characterization and mapping (usually GIS-based) of ecosystem-wide shoreline processes, including updated SMA jurisdictional boundaries
4. Characterization and mapping of ecosystem-wide shoreline functions
5. Development of shoreline policies and regulation, including elements addressing permit administration, compliance and enforcement
6. Application of shoreline environment designations for all shorelines
7. Preparation of a shoreline restoration plan that identifies areas with impaired ecological functions, all existing and planned projects and programs being implemented that will contribute to newly established restoration goals, prospective funding, timelines and benchmarks, and strategies to ensure the programs are implemented according to the new restoration plan.
8. Demonstration that the new guidelines mitigation standard of “no-net loss of shoreline ecological function” will be achieved through implementation of the proposed SMP. This is accomplished by evaluation of cumulative impacts and adjustment of proposed policies, regulations and environment designations to mitigate for anticipated new impacts.
9. Completion of a local SMP adoption process, submitted to Ecology for approval. Updated SMPs do not take effect until Ecology approves them.

The Guidelines include sections related to a wide variety of activities and uses. Preference is given to water oriented uses where such uses are reasonable and appropriate and conducted in a manner that achieves no net loss of shoreline ecological functions.

Implementation of these guidelines will not occur automatically or easily. Each local government must give careful consideration to the options and tradeoffs inherent in the program.

Implementation will require a depth of scientific understanding of shoreline ecological functions and processes not typically required of local government land use managers. Because of these factors, significant financial and technical assistance will be required as well as an appropriate amount of time to do the work.

Specifically, local governments will for the first time, be required to project impacts of future development that would be allowed by the proposed master program regulations being considered. This up-front assessment will address potential impacts due to all anticipated development, including shoreline uses not requiring a shoreline permit. This will include cumulative adverse impacts caused by incremental development, such as residential bulkheads, residential piers, or runoff from newly developed properties. Master programs must also include master program policies and regulations to assess, minimize, and mitigate cumulative impacts.

Area	CSI Threats
Wetlands	Wetlands are subject to filling or degradation in urbanizing areas; the problems are discussed in detail in the Wetlands section of this assessment.
Fish and Wildlife Habitat	Generalized fish and wildlife habitat remains subject to chronic degradation or replacement by urban and rural land uses. Riverine, lake, and marine system degradation resulting from development including flood management measures, bank hardening, vegetation removal and runoff have degraded fish and wildlife habitat.
Intertidal Fish and Shellfish Habitat	Commercial and recreational shellfish beds in many areas remain at risk from contamination by urban and rural runoff, failing on-site sewage systems, boater wastes, and to a lesser degree other problems. Salmon rearing habitat and migration corridors are affected by water quality and shoreline modifications such as armoring and removal of native vegetation.
Puget Sound Shorelines	Puget Sound shorelines, the area between Puget Sound's banks and bluffs, and the Sound's marine waters, are the least studied, least understood landscape feature in the region. They are affected by the adverse impacts of shoreline armoring (see Coastal Hazards assessment), the proliferation of private docks and other shoreline modifications, habitat loss due to clearing and landscaping in addition to shoreline modifications.
Aesthetics, Open Space, and Public Access	In urban and suburban areas the loss of open space remains a problem, as is deteriorating marine shoreline aesthetics due to larger shoreline modifications such as armoring and stair towers. The provision of public access, either actual or visual, has not kept pace with population growth (see Public Access assessment).

Ecology is required (in RCW 90.58.050) to provide technical assistance and oversight to local governments engaged in the SMP update process. Related outreach and training is provided by Ecology in a number of forms, including:

Extensive internet based guidance providing up-to-date direction to local government planners and their consultants on how to comply with guidelines requirements, with direct links to available data and access to downloadable (pdf) files. The strategy here is to develop and keep current over time needed policy, technical and procedural guidance with specific reference to real examples whenever possible. This approach makes the best use of our limited resources.

Ecology will also sponsor regular early adopter coordination meetings. The audience for these gatherings is local planners and their consultants, state resource agency staff, and Ecology staff, with the dual purpose of:

1. Providing Ecology with a consistent and predictable conduit for presenting the latest developments in guidance materials, data and technical information, funding, legislation, litigation, etc., to local grant recipients, and
2. Providing a regular guidelines-specific venue for person-to-person networking, sharing data and methodologies as new SMP updates are being developed. Coordination meeting agendas will be driven primarily by local governments and their needs.

Conclusion

1. The guidelines, as a part of the state's overall system of land use and environmental management, hold the promise for significant transformation of the management of cumulative and secondary impacts of growth in Washington's Coastal Zone. However, implementation at the local level is the key to realization of this transformation. Significant technical, legal and political questions must be continually addressed in order for local government to be able to properly implement the guidelines. With the on-going presence of endangered species as an issue, the technical considerations are even greater than previously expected. Continued development of a wide variety of comprehensive technical assistance materials and an on-going program for disseminating this information to local government is critical.

2. The prior and proposed priorities for Cumulative and Secondary Impacts are:

2001 Assessment	This Assessment
High	High
Medium	Medium
Low	Low

3. We are now at that point in time when the objectives of several major initiatives now underway present a rare opportunity to make significant progress in addressing CSI concerns. A key component of these efforts include the work of updating local shoreline programs required by the recently adopted shorelines guidelines rule, together with the updating of local critical areas ordinances under the Growth Management Act, addressing the requirements of the ESA for listed species in shoreline jurisdiction and watershed characterization and planning efforts now being conducted across the state. One of the central goals of shoreline guidelines implementation is to recognize and integrate the contributions these efforts make in dealing with the complicated CSI issue. The more efficient we are in integrating such efforts the more effective we will be in realizing the potential of the guidelines and in making real progress in addressing CSI concerns. It would be most unfortunate not to make the most of this opportunity.

In support of shorelines guidelines implementation are commitments by the state to assist local governments in the development of appropriate legislative changes, funding requests, guidance materials and providing direct hands-on technical assistance. Implementation of the new Guidelines and related local SMP updates represent the traditional core function of Ecology's Shorelands Program, and remain the program's top priority. Whether it be protection and restoration of wetlands and fish and wildlife habitat, floodplain functions, controlling pervasive shoreline armoring or vegetation removal, implementing the guidelines will produce significant advancements in avoiding and/or mitigating for the cumulative and secondary impacts of growth.

Marine Debris

Section 309 Programmatic Objectives

1. *Develop or revise programs that reduce the amount of marine and lake debris in the coastal zone.*

Marine Debris Characterization

1. The extent of marine and lake debris and its impact on the coastal zone is characterized in the table below.

Source	Level of Impact	Type of Impact
Debris from ships at sea.	Seasonally significant on ocean beaches. Chronically and locally moderate in Puget Sound.	Varies: aesthetic, personal injury
Derelict fishing gear.	Significant to moderate.	Entanglement of humans, fish, and marine mammals in monofilament fishing line and fishing nets. Damage to propellers and rudders of recreational, commercial and military vessels, as well as putting the vessels' crews in danger. Derelict fishing gear has been known to entangle and overturn small boats.
Shoreline and recreational activities.	Moderate to insignificant.	Varies: aesthetic, personal injury
Urban debris	Moderate	Aesthetic, habitat degradation

2. The degree of change in severity of any class of marine debris cannot be accurately assessed due to a lack of systematic, comprehensive monitoring or other information necessary to make such a judgment. Such reporting as exists is more anecdotal than quantitative. For example, the Sixth Annual Olympic Coast Cleanup held during April 2005 by 647 volunteers covering 70 miles of beaches collected 37 tons of marine debris. The 2003 International Coastal Clean-up program for Washington State reported for beach and underwater cleanups the following based on simple counts of items recovered (Ocean Conservancy, 2004):

- Beach cleanups: 65% recreational activity materials; 18% shipping sources; 15% tobacco smoking sources; 2% dumping activities; 1% medical & personal hygiene.
- Underwater cleanups: 87% recreational activity materials; 13% shipping sources.

Management Characterization

1. State Ocean and Puget Sound management programs and initiatives developed or changed since the last assessment are summarized in the table below.

Program	Status	309 \$
State or local programs requiring recycling	No change.	None.
State or local programs to reduce littering	No change.	None.
State or local programs to reduce wasteful packaging	No change.	None.
State or local programs managing fishing gear	A derelict fishing gear recovery program was initiated by the Northwest Straits Commission in cooperation with the Wash. Dep't of Fish and Wildlife.	None.
Marine debris concerns incorporated into harbor, port, marina and coastal solid waste management plans	Incorporated into a Puget Sound boaters guide published by Puget Soundkeeper Alliance with funding from the Wash. State departments of Parks & Recreation and Ecology, and West Marine boating stores.	None.
Education and outreach programs	Initiated in conjunction with the derelict fishing gear recovery program by the Northwest Straits Commission.	None.

The derelict fishing gear recovery program was initiated in October 2001 by the Northwest Straits Commission. The recovery program comprehensively addresses: 1. Location (through surveys and a public reporting program) 2. Verifying and Prioritizing; 3. Removing; and 4. Reusing, Recycling and Disposing.

The Northwest Straits Commission has developed Derelict Gear Removal Guidelines, in partnership with Washington Department of Fish and Wildlife and other organizations. The Department of Fish and Wildlife has published these guidelines. Both agencies conduct public education programs.

State legislation adopted in 2002 calls for agency coordination of derelict fishing gear removal in state marine waters. Agencies and organizations involved in the project include: Northwest Straits Commission, the Marine Resources Committees of Whatcom, Skagit, San Juan, Snohomish, Clallam, Jefferson, and Island counties, National Oceanic and Atmospheric Administration, U.S. Navy, Washington Department of Fish and Wildlife, Washington Department of Natural Resources, Washington Sea Grant Program, Puget Sound Water Quality Action Team, Tulalip Tribes, Hood Canal Salmon Enhancement Group, commercial fishing and diving companies, and private foundations.

Conclusion

1. Much of what is accomplished is by nongovernmental organizations⁶ funded by commercial and governmental sponsors utilizing volunteer labor, and they do a good job of it at minimal expense. The derelict fishing gear program is a governmental program.

2. Previous and proposed priorities:

2001 Assessment	This Assessment
High	High
Medium	Medium
Low	Low

3. Marine debris is ranked as a low priority largely because there are other, more pressing land use management needs for the CZM program to address according to its state mandates, and because other groups, both public and private, are addressing marine debris.

⁶ Key coordinating sponsors include: The Ocean Conservancy's International Coastal Cleanup program; the Olympic Coast Clean-up;

Special Area Management Planning

Section 309 Programmatic Objectives

1. *Develop and implement special area management planning in coastal areas applying the following criteria:*
 - *areas including significant coastal resources (e.g., threatened and endangered species and their critical habitats, wetlands, waterbodies, fish and wildlife habitat) that are being severely affected by cumulative or secondary impacts;*
 - *areas where a multiplicity of local, state, and federal authorities prevents effective coordination and cooperation in addressing coastal development on an ecosystem basis;*
 - *areas with a history of long-standing disputes between various levels of government over coastal resources that has resulted in protracted negotiations over the acceptability of proposed uses;*
 - *there is a strong commitment at all levels of government to enter into a collaborative planning process to produce enforceable plans;*
 - *a strong state or regional entity exists which is willing and able to sponsor the planning program.*

Resource Characterization

There are no areas in Washington State which are known to qualify as candidates for special area management planning under the terms of the Coastal Zone Management Act or the Section 309 programmatic objectives. However, see the following section (Special Area Management Characterization) for the existing Grays Harbor Estuary Management Plan.

Special Area Management Characterization

The only Special Area Management Plan in Washington State approved by the Office of Ocean and Coastal Resource Management is the Grays Harbor Estuary Management Plan.

Grays Harbor

The Grays Harbor Estuary Management Plan (GHEMP) was first adopted in principle in 1986 by the Grays Harbor area local governments and by the state and federal agencies with pertinent regulatory authorities. Final formal adoption did not occur until 1993, when the City of Ocean Shores incorporated the GHEMP into their Shoreline Master Program and the federal Office of Ocean and Coastal Resource Management (OCRM) was able to formally certify the GHEMP at the federal level.

The GHEMP, by its own terms, is to be reviewed every 7 years and amended as necessary. An updated plan was drafted in 1993, but was never formally adopted or submitted to OCRM. A second effort, commonly referred to as Round 2, was initiated in 1997 to review and update the GHEMP.

During the Section 309 Round 2 period, significant progress was achieved to update the GHEMP in 1997-99 but, in the end, the GHEMP Task Force determined that too much uncertainty existed with respect to [1] the pending Endangered Species Act listing of various salmon populations,

[2] the pending amendment of the Shoreline Master Program Guidelines regulation, and [3] the inconsistent application of the GHEMP by some state and federal regulatory agencies. These uncertainties impeded further progress and completion of the update process.

Finally, it was learned late in the Round 2 process that the development and adoption process would have to comply with the United States Army Corps of Engineers' own regulations for a SAMP, in addition to any procedures under the Coastal Zone Management Act, in order for the Corps to participate in any special area management plan agreement. Further, the Corps' process would set the existing GHEMP process back to a point of beginning, with a period of two to three years necessary for completion.

By acclamation, the Task Force determined to suspend further work on an update of the GHEMP until the aforementioned uncertainties were resolved. The Department of Ecology concurred with this decision.

Subsequently, the then-pending amendment of the Shoreline Master Program Guidelines was adopted in November 2000, but was challenged before the Shoreline Hearings Board (SHB), which invalidated the newly adopted rule in August 2001 (*Association of Washington Business v Washington Department of Ecology*). Rather than pursue a traditional course of appeals through higher courts, the Department of Ecology and the parties to the SHB case reached a negotiated settlement, and the resultant draft was finally adopted into regulations in December 2003. This settlement resolved one of the uncertainties that, in 1999, had led to the suspension of the efforts to review and update the GHEMP.

Local governments are on a progressive schedule to update their local Shoreline Master Programs under the new guidelines rule. Grays Harbor County and the cities within the County are scheduled to adopt updated shoreline master programs by 2014.

The management issues for Grays Harbor remain essentially the same as they were in 1997:

- a need for wetland mitigation banking had been expressed by local port districts and the City of Ocean Shores;
- water quality in Grays Harbor, especially in regards to commercial shellfish harvest is a continuing concern;
- habitat management is an issue in a variety of settings including the Lower Chehalis River surge plain;
- typical of the Pacific Northwest, management of wild stocks of salmon is a concern in the Grays Harbor drainages; and
- invasion by various *Spartina* species, which is a problem in Willapa Bay and portions of Puget Sound and has now reached Grays Harbor.

Conclusion

1. The only SAMP formally adopted as a part of Washington's coastal zone management program is the Grays Harbor Estuary Management Plan. There is a general consensus that any necessary action on the GHEMP would be more economically addressed at the time the local governments are developing their updated Shoreline Master Programs under the updated SMP Guidelines rule during the period 2012 - 2014.

2. Previous and proposed priorities:

2001 Assessment

High

Medium

Low

This Assessment

High

Medium

Low

3. Special Area Management Planning is ranked as a low priority largely because while there are important unresolved issues, there is no indication that the conditions which lead to the suspension of the GHEMP amendment process or the lack of consensus regarding coastal erosion management in southwest Washington have changed. Additionally, the local governments which are party to the GHEMP are not scheduled to complete a update of their Shoreline Master Programs until 2014 during the next (fifth) round of Section 309 Improvements funding. That is judged to be a more appropriate time to consider whether or not GHEMP is still necessary and useful, and if so, how it should be amended.

Energy and Government Facility Siting

Section 309 Programmatic Objectives

1. *Enhance existing procedures and long range planning processes for considering the needs of energy-related and government facilities and activities of greater than local significance.*
2. *Improve program policies and standards which affect the subject uses and activities so as to facilitate siting while maintaining current levels of coastal resource protection.*

Management Characterization

The Washington State Energy Facility Site Evaluation Council (EFSEC or Council) provides a “one-stop” siting process for major energy facilities in the State of Washington. The Council coordinates all of the evaluation and licensing steps for siting major energy facilities in Washington. If a project is approved, EFSEC specifies the conditions of construction and operation; issues permits in lieu of any other individual state or local agency authority; and manages an environmental and safety oversight program of facility and site operations.

EFSEC is a Washington State agency comprised of a Chair appointed by the Governor, and representatives from five state agencies (Ecology; Fish and Wildlife; Natural Resources, Commerce, Trade, and Economic Development; and the Utilities and Transportation Commission). Four other agencies are not regular members of the Council, but can elect to appoint a Council representative for the siting of new projects (Agriculture; Health; Transportation; and Military).

When an application to site a facility is submitted to the Council, it is augmented by representatives from particular cities, counties, or port districts potentially affected by the project. The Council was created in 1970 to provide “one stop” licensing for large energy projects. By establishing the Council, the State Legislature centralized the evaluation and oversight of large energy facilities in a single location within state government. The Legislature called for “balancing” demand for new energy facilities with the broad interests of the public. As part of the balancing process, protection of environmental quality, safety of energy facilities, and concern for energy availability are all to be taken into account by the Council.

The Council’s responsibilities derive from the Revised Code of Washington (RCW) 80.50, and include siting large natural gas and oil pipelines, thermal electric power plants that are 350 megawatts or greater and their dedicated transmission lines, new oil refineries or large expansions of existing facilities, and underground natural gas storage fields. In addition, energy facilities of any size that exclusively use alternative energy resources (wind, solar, geothermal, landfill gas, wave or tidal action, or biomass energy) can opt-in to the EFSEC review and certification process. EFSEC’s authority does not extend to hydro based power plants, thermal electric plants that are less than 350 megawatts, or to general transmission lines.

Conclusion

1. There are no known major gaps in meeting the programmatic objectives for this enhancement area. The 1993 Legislature reviewed EFSEC for needed change and none were proposed by the Legislature.

2. Previous and proposed priorities:

2001 Assessment	This Assessment
High	High
Medium	Medium
Low	Low

3. As concluded, there are no known major gaps in meeting the programmatic objectives for this enhancement area.

Aquaculture

Section 309 Programmatic Objective

1. *Enhance existing procedures and long range planning processes for considering the siting of public and private marine aquaculture facilities in the coastal zone.*
2. *Improve program policies and standards which affect aquaculture activities and uses so as to facilitate siting while maintaining current levels of coastal resource protection.*

Aquaculture Characterization

Washington's aquaculture industry is dominated by salmon net pen facilities in Puget Sound; oyster and clam cultivation in Puget Sound, Grays Harbor, and Willapa Bay; and mussel growing in Puget Sound. In addition, new culture techniques have been developed for the cultivation of Geoduck clams in the intertidal zone. In recent years the shellfish industry, aided by federal grants, have invested substantial funds to further improve Geoduck culture methods. (The traditional ship-based deep-water harvest of Geoduck clams in Puget Sound is co-managed as a wild fishery by Department of Natural Resources and the Department of Fish and Wildlife.)

Currently, Washington State leads all other West Coast states in total production of aquaculture products and is one of the top producers of oysters in the United States, (Toba and Chew, 1999) and is the top producer in the United States of Manila clams.

The principal environmental concerns are [1] water quality and other environmental issues, [2] land use patterns and conflicts, and [3] introduced pests and predators.

This assessment is virtually unchanged since 1997.

Water Quality

Water quality remains a problem for commercial shellfish aquaculture throughout the state. Principal causes are diverse, and in different regions might include sewage treatment plant discharges, failing on-site sewage treatment systems, marina and boater wastes, animal or other agricultural wastes, or urban runoff and similar nonpoint discharges.

Commercial shellfish growing areas can be negatively affected not only by the pathogenic inputs that make the shellfish unfit for human consumption, but also nutrient inputs that can result in increased plankton production which, in turn, can lead to low dissolved oxygen concentrations, especially where the receiving waters are nutrient limited. On the other hand, in areas of intensive shellfish aquaculture production, these effects can be mitigated to the extent that shellfish (as filter feeders) consume the "excess" phytoplankton. The National Academy of Sciences recently produced a report on the negative impacts of nutrient over-enrichment. It states, "Estuaries and coastal zones are among the most productive ecosystems on earth. There is strong concern that the natural resources they represent are in danger from eutrophication and other problems caused by excess input of nutrients." (Committee on the Causes and Management of Eutrophication, 2000).

The Washington Department of Health classifies more than 100 commercial shellfish growing areas in Puget Sound and in Pacific coastal embayments. Over 200,000 acres are classified as Approved or Conditionally Approved. (This acreage does not include subtidal Geoduck tracts.) Since 1981, the department has downgraded the classification of more than 47,000 acres as the

result of declines in sanitary conditions, but has upgraded only about 13,000 acres. In the 1980s, the department downgraded the classification of almost 33,000 acres, but upgraded only about 1,000 acres. However, in the 1990s, the total acres upgraded and downgraded were nearly equal. (Office of Food Safety and Shellfish Programs, 2000.)

New waste discharge standards (WAC 173-221A-110) were adopted by the Department of Ecology in October 1995. New sediment management standards (Chapter 173-204 WAC) were adopted by the Department of Ecology in January 1996. Both of these standards should result in general water quality and benthic improvements of marine systems.

More intractable is the problem of nonpoint contamination from on-site sewage systems, urban runoff, and boater wastes. In recent years much effort has been devoted to watershed management at the local government level, aided by grants and technical assistance from state agencies. The gains have been few, incremental, and hard won. Still, in some regions of the state a long-term trend toward degradation of commercial shellfish beds has been slowed or halted. That favorable trend, however, may be reversed if shoreline development continues at its current rate, particularly in light of projected population increases.

Burrowing Shrimp Management

Washington State's coastal estuaries are productive shallow water environments that support commercial fisheries for Dungeness crabs (*Cancer magister*) and English sole (*Parophrys vetulus*) by providing 0+ (settlement to age 1) populations with critical refuge and foraging habitats until subadults migrate to the nearshore coast. Intertidal mudflats also constitute prime areas for commercial oyster (*Crassostrea gigas*) culture, an important industry for the coastal communities of Willapa Bay and Grays Harbor that supply much of the nation's oysters. Debates over natural resources and estuarine utilization have arisen over the last 37 years due to the use of carbaryl (an organocarbamate pesticide) by oyster growers on their grounds to control populations of burrowing thalassinid shrimp (*Neotrypaea californensis* and *Upogebia pugettensis*). Burrowing shrimp, which have an indirect negative effect on oyster survival and growth by resuspending sediments and softening the substrate resulting in oysters sinking or being buried, thus inhibiting growth or killing the crop, are killed by carbaryl, as are the 0+ and subadult Dungeness crabs, 0+ English sole, and other nontarget species on the tideflats at the time of application. No long-term adverse effects to estuarine communities (including benthic invertebrate communities) have clearly been attributed to carbaryl applications. Under present practices, carbaryl is applied directly to exposed tideflats at low tide. Current licensing requires 200-foot application setbacks from tidal channels. (Bentley, 2000; Dewey, 2001; Feldman, et al., 2000; Memorandum of Agreement. 2001.)

In January, 2001, the oyster industry signed an agreement with various state agencies to study ways to reduce the industry's reliance on carbaryl through the development of an integrated pest management (IPM) plan by March 2002 (Memorandum of Agreement, 2001). Prior to the early 1960s the burrowing shrimp populations in Willapa Bay and Grays Harbor were not a problem for commercial oyster growers. Part of the goals of the IPM research program will be to determine why former natural controls over burrowing shrimp have changed. (Wilkins, 2001.)

Land Use Conflicts

Land use conflicts are diverse, complex, and widespread, and not all are limited to nearshore areas. Broad land use patterns and density also contribute to the problems of water quality and habitat degradation.

Nearshore land use conflicts are easily dismissed as merely aesthetic, but that has not been a useful framework for dealing with the issue. Residential shoreline property owners are typically opposed to the siting of floating aquaculture facilities such as mussel rafts or salmon net pens, or the permitting of Geoduck harvest operations, within their viewshed. Noise is also cited as an issue. Aquaculturists are adversely affected by residential stormwater runoff, on-site sewage effluents, and boater wastes. In many ways this is a land use conflict similar to any situation where residential land uses abut resource extraction or agricultural land uses. While other industries potentially have the option of moving to less developed areas of the State, the aquaculture industry is limited to the same shoreline areas that attract the most shoreland development.

Introduced Pests and Predators

Pest and predator introductions have the potential to threaten every facet of aquaculture. Habitat alteration affects primarily oyster culture in Willapa Bay which is increasingly threatened by an infestation of nonindigenous species of *Spartina*. *Spartina* infestation spread to Grays Harbor and some embayments of Puget Sound in the mid 1990s, and continues to gain ground. Please refer to the Wetlands assessment for a comprehensive discussion of *Spartina*. The European Green Crab, a nonindigenous species first found in Willapa Bay in the late 1990s, has the potential to severely affect shellfish production as well as the Dungeness crab industry. The Green Crab is an effective predator of shellfish, and can out-compete native crabs for food and habitat. As more and more international and interstate movement occurs in our waterways, the potential for introductions of nonindigenous and aquatic nuisance species increases. The State Department of Fish and Wildlife has created a State Aquatic Nuisance Task Force dedicated to developing a state-wide plan for the control and/or eradication of aquatic nuisance species.

Management Characterization

Federal Policies on Aquaculture

The US Department of Commerce (DOC) through the National Oceanographic and Atmospheric Administration (NOAA) has identified several conservation strategies that include building sustainable fisheries. Within that strategic plan is the objective of “promoting the development of robust and environmentally sound aquaculture.” It states, in part, “[w]hile aquaculture is not a substitute for wise management of wild stock fisheries, it is a vital tool to help meet the growing demand for seafood in the next century...” (NOAA, 1995).

To meet the objective of a sound and robust aquaculture program, the National Marine Fisheries Service (NMFS), in partnership with other elements of DOC and NOAA, will study new candidate species for culture, address user conflicts affecting aquaculture development, and will work with the aquaculture industry to develop, identify and evaluate transfer technologies for efficient aquaculture that is also environmentally sound.

Aquaculture development activities are regulated for the prevention of environmental impacts by the US Army Corps of Engineers through the Clean Water Act (Section 404), and the Rivers and Harbors Act (Section 10), and the NPDES (National Pollution Discharge Elimination System) permit program.

Recent threatened and endangered salmon listings have required the aquaculture industry to review operations and ensure activities do not result in a “take.” Through the course of this review, the industry determined a comprehensive plan was needed that would allow the

continuation of industry activities in the marine environment while still protecting the State's wild salmon resources. Discussions with NMFS have led the industry to begin the development of an industry wide programmatic Habitat Conservation Plan (HCP) for shellfish culture. As a first step to an HCP, the shellfish industry has embarked on the adoption of a comprehensive Environmental Management System.

State Policies on Aquaculture

Washington's legislative policy regarding the fostering and regulation of aquaculture is principally embodied in six acts: the Aquaculture Marketing Act of 1994 (Chapter 15.85 RCW); the Multiple Use Concept in Management and Administration of State-Owned Lands Act of 1971 (Chapter 79.68 RCW); the Aquatic Lands Act of 1984 (Chapter 79.90 RCW); the Shoreline Management Act of 1971 (Chapter 90.58 RCW); the Water Pollution Control Act (Chapter 90.48 RCW), and the Growth Management Act (Chapter 36.70 RCW). Additional regulations can be found in Department of Fish and Wildlife statutes.

The Aquaculture Marketing Act declares that it be "...the policy of this state to encourage the development and expansion of aquaculture..." and that "...the legislature encourages promotion of aquacultural activities, programs, and development with the same status as other agricultural activities, programs, and development..."

The Multiple Use Concept Act declares that "[t]he department of natural resources shall foster the commercial and recreational use of the aquatic environment for production of food, fiber, income and public enjoyment from state-owned aquatic lands under its jurisdiction and from associated waters, and to this end the department may develop and improve production and harvesting of macro-algae and sealife attached to or growing on aquatic land or contained in aquaculture containers..."

The Aquatic Lands Act is a broad piece of legislation setting policy for the use and management of the state's aquatic lands for, among other uses, aquaculture.

The Shoreline Management Act (SMA) sets forth state policy for the management of all shorelands, public and private. The SMA is implemented by local governments (under state Department of Ecology oversight) through local shoreline master programs. The SMA provides direction for prioritizing shoreline uses and identifies water-dependent industry as a preferred use of the shoreline environment. Recently adopted changes to Department of Ecology's Shoreline Guidelines, which establish minimum requirements for local government master programs, recognize aquaculture as an activity "...of statewide and national interest." And, "...can result in long-term over short-term benefit and can protect the resources and ecology of the shoreline." Additionally, the Guidelines state, "Aquaculture is dependent on the use of the water area and, when consistent with control of pollution and prevention of damage to the environment, is a preferred use of the water area."

The Water Pollution Control Act regulates aquaculture such as salmon net pen operations through the Sediment Management Standards.

The Growth Management Act requires local governments through their comprehensive planning processes to identify provide for protection of critical fish and wildlife habitats which can include commercial shellfish beds.

Aquaculture activities are regulated for disease and pest transfer through Washington State Department of Fish and Wildlife's Food Fish and Shellfish statutes.

Conclusion

1. There are four key unresolved aquaculture issues in Washington State: [1] the problem of declining water quality adversely affecting commercial shellfish beds [2] land use conflicts between abutting residential and aquaculture land uses [3] introduction of nonindigenous and aquatic nuisance species, and [4] uncoordinated and diverse state policies which do not necessarily appear to be consistent with federal policies.

- Water quality is an issue which must be addressed on a watershed basis, as it is through the existing Puget Sound Plan or the various watershed planning programs.
- Land use conflicts and policy consistency are issues which can be addressed through local Shoreline Master Programs under the Shoreline Management Act, and the state's federally-approved Coastal Zone Management Program.
- Exotic species management is an issue which requires coordination and cooperation between local governments and the Washington Department of Agriculture and/or the Washington Department of Fish and Wildlife.
- Relevant, existing state laws affecting aquaculture are implemented by at least five distinct state agencies with no coordinating council

2. The priority assigned to this area, in the view of the needs of the coastal program to complete updating of local Shoreline Master Programs, is "Medium."

1997 Assessment

High

Medium

Low

This Assessment

High

Medium

Low

3. The aquaculture improvement area was ranked high in the Third Round assessment of 1997 because of aquaculture's role as an indicator of the overall health of Washington's marine environments, as well as the inherent needs of the aquaculture industry. Aquaculture remains important and a priority for improvement. However, during the Fourth 309 Improvements phase we will address aquaculture through amendment of local shoreline master programs — see Cumulative and Secondary Effects of Growth section.

4 • Public Comments

This chapter is a place-holder for the final report.

5 • Strategies

Cumulative and Secondary Effects of Growth

Washington State will propose an Improvement Grants strategy only for the Cumulative and Secondary Effects of Growth category which will provide policy and technical assistance to local governments engaged in development of updated Shoreline Master Programs (SMPs). This approach will also benefit other 309 Improvement areas including public access, management of coastal hazards, and wetlands.

a. Problem Statement: Implementation of the Round 4 Program Improvement

The current assessment of Washington's coastal zone highlights the fact that implementation of the new shoreline master program guidelines rule, as a part of the state's overall system of land use and environmental management, holds great promise for significant transformation of the management of cumulative and secondary impacts of growth in Washington's Coastal Zone. The new guidelines direct the update of every SMP in the coastal zone over the next decade.

Although the new guidelines rule is now in effect, significant technical and policy issues must still be addressed in order for local governments to properly implement the guidelines and address the cumulative impacts of anticipated growth. With the on-going presence of endangered species as an issue, technical considerations are even greater than previously expected.

Continuing development of a wide variety of guidance and technical assistance materials as well as an on-going program for disseminating such information through outreach and training of local government shoreline planners and other parties involved in the process will be critical. Each local government must give careful consideration to the options and tradeoffs inherent in the program. The guidelines require local government to inventory the resources and characteristics of their shorelines and address the direct and cumulative impacts of development on the shorelines in a manner that preserves and restores the natural character of the shoreline. Implementation will require a depth of scientific understanding of shoreline ecological functions and processes not typically required of local government land use managers. Because of these factors, significant financial and technical assistance will be required.

State funds appropriated for this effort provide direct pass-through monies to local governments only. No state funding is provided for Ecology staff to prepare needed guidance materials or to conduct training and related duties.

b. Proposed Program Changes

During the Fourth Improvement Grants phase approximately 30 local governments will develop and adopt updated local Shoreline Master Programs, and will be approved by the Department of Ecology. These local SMPs, when approved by the federal Office of Ocean and Coastal Management (OCRM) will become an approved part of Washington's Coastal Zone Management Program. Full implementation in the coastal counties will not occur under the legislatively mandated schedule until 2014.

c. Justification for Proposed Changes

Mandatory requirements to address cumulative and secondary impacts (CSI) in SMP updates are entirely new to most shoreline planners and resource managers in Washington state. This represents a significant change or transformation.

Implementation of the new guidelines and related SMP updates represent the traditional core function of Ecology's SEA Program and remain the program's top priority. However, implementation at the local level is the key to realizing the transformation. Significant technical, legal and policy questions must be addressed in order for local government to be able to properly implement the guidelines. With the continued emergence of watershed planning, integration with the state's Growth Management Act, and the emergence of endangered species as issues, the policy and technical considerations are greater than previously expected. Development of comprehensive technical assistance materials and a program for disseminating this information to local government is the next critical step. In support of Guidelines rule implementation are commitments by the state to assist local governments in the development of appropriate legislative changes, funding requests, guidance materials and by providing direct hands-on technical assistance. Whether it is protection and restoration of wetlands, floodplain functions, controlling pervasive shoreline armoring or vegetation removal, the guidelines should produce significant advancements in avoiding and/or mitigating the cumulative and secondary impacts of growth.

d. Implementation

Ecology's adoption of the new Guidelines rule was the critical first step in controlling the cumulative and secondary impacts of growth. However, the Guidelines rule is not enough in and of themselves. It is now up to local governments, with the support of Ecology, to incorporate Guidelines objectives and standards into their local SMP updates. Implementation will occur in the coastal zone in years to come consistent with the mandatory schedule of SMP updates set forth in the Shorelines Management Act (SMA RCW 90.58.080). All updates are to be completed statewide by 2014.

The next jurisdictions to face mandatory deadlines are those located in Washington State's most populous county – King (together with municipalities within King County having a population greater than 10,000). While these are mandatory deadlines, many local jurisdictions throughout the coastal zone have shown interest in voluntarily updating their SMPs ahead of mandatory deadlines. We anticipate this occurring as long as funding is available. The state legislature has committed to funding SMP updates through 2014.

SEA Program staff and resources will be aligned to support implementation of the new guidelines CSI requirements. This will require:

- Internal training of existing SEA Program staff (including new hires).
- Collection of the most current scientific and technical data, maps and materials.
- Preparation of guidance materials, including exploration of the latest methodologies for analyzing and addressing CSIs.
- Distribution and negotiating of grants to local governments to conduct the necessary work.

- Outreach and training of local coastal zone planners and resource managers (and their consultants), elected officials, and citizens engaged in SMP updates, as well as other state agencies and tribal representatives who contribute to such efforts.
- Update and on-going maintenance of web-based guidance materials
- Specific Impact Areas: there are certain issue areas where cumulative and secondary impacts are specifically noted. These include impacts from single family residences, bulkheads, and piers and docks. CZM 309 funding could be used to develop written State policy documents related to the use, impact and management of these impacting structures.

e. Rationale

Two key aspects of the assessment acknowledge the need for technical assistance and cooperation/coordination with other efforts. For local governments to be successful, it is imperative that the State provide technical assistance. The types of technical tools to be developed through this strategy will enable all jurisdictions to consistently update their SMPs consistent with the guidelines which will lead to properly managed shorelines and control of the cumulative and secondary impacts of growth.

Given the limited resources of all stakeholders involved in these efforts, combining resources and managing issues collaboratively will result in greater protection of coastal resources. Three other significant and related efforts are underway which can converge to maximize our resources. Updating of local critical area ordinances through the State's Growth Management Act, organizing and implementing the State's Watershed Planning Act, and developing responses to the Endangered Species Act all relate to protection of coastal resources and management of cumulative and secondary issues. The strategies listed above will allow Ecology to bring these other efforts together to help local communities manage their coastal resources in an effective and efficient manner.

f. Work Plan

Implementation of the guidelines is accomplished by local governments incorporating CSI requirements into their updated SMPs. In order for this to happen, most local governments need technical and regulatory support. Training and outreach activities will provide that support consistent with the following priorities, and internal and external strategies:

A. Training and Outreach Priorities (highest priority first):

- a. Preparing policy and technical guidance, presentations, and related materials that send a consistent message (e.g. there is no one "right" approach for all jurisdictions; now is the time to plan ahead to prevent new impacts; conduct analysis of broader ecosystem-wide processes first, then assess current ecological functions before developing more specific SMP provisions) and establish the foundation for building capacity at all levels.
- b. Development of "good examples" that we can reference and others may replicate.
- c. Limited scope SMP amendments.
- d. Training and outreach to other related interest groups (i.e. realtors, shoreline property owners, general citizenry, other state resource agencies, etc.).

B. Internal Training Strategy:

- a. Engage staff in review and comment of guidance materials prior to public release.
- b. In the near term, prepare outcome-based general guidance describing new guidelines requirements, suggested methods and steps in developing guidelines compliant SMPs.
- c. Use internal monthly coordination meetings as the prime vehicle for communicating with staff.
- d. Use Ecology's web-based guidance as the method for organizing existing and future training materials. The web site will contain a different page for each major step in SMP development: a general description of the topic and what's required; links to statutory and guidelines rule language; available state level information; links to good local SMP examples where they exist.

C. External Training and Outreach Strategy:

- a. Ecology will host local government coordination meetings on at least a quarterly basis with the dual purpose of:
 - i. Providing Ecology with a consistent and predictable conduit for presenting the latest information to local grant recipients, and
 - ii. Providing local government planners with a regular guidelines-specific venue for person-to-person networking as new SMP updates are being developed.
- b. Organize guidance and outreach using a web-based approach with direct links to available addressing :
 - i. the latest scientific and technical information
 - ii. contact information for others doing SMP updates
 - iii. funding opportunities
 - iv. training opportunities

The strategy is to develop guidance by ensuring we first generally cover the broader universe of issues, moving then to more specific issue-based guidance as it is developed and further supplemented by real examples. This approach makes the best use of our limited resources.

g. Estimated Costs

It is anticipated that the total costs (staff plus direct expenses) of implementing this strategy will absorb the entire Section 309 Improvement Grant award each year.

h. Likelihood of Success

With the adoption of the SMP guidelines by Ecology in December 2003, we completed a critical first step in improving Washington's management of cumulative and secondary impacts. This represents the culmination of 10 years of work. Over the decade we gained support for state funding for the duration, until all SMPs are updated consistent with the new guidelines. We have also developed a healthy collaborative relationship with the National Marine Fisheries Service (NMFS; aka NOAA Fisheries), the US Fish and Wildlife Service (USFWS) and the Office of

Ocean and Coastal Resource Management (OCRM) who are working together with us to recognize the new guidelines as part of Washington's Coastal Zone Management Program (CZMP). There are already local governments which are voluntarily revising their SMPs ahead of schedule to meet the new standards because they believe it is essential to protecting and restoring coastal resources. Our training and outreach strategy detailed herein should provide an on-going opportunity for Ecology to work with local governments and other interested stakeholders to collectively develop science and policy aimed at effectively addressing the cumulative and secondary impacts of development. Implementing the new guidelines and the CSI standards contained therein will have the greatest likelihood of success if we move quickly to capitalize on the opportunities presented in the early rounds of SMP updates.

6 • Fiscal and Technical Needs

Fiscal Needs

Washington State Budget:

Funding for the state's general fund budget is currently limited by growth in revenue from the state's chief tax sources (sales taxes and property taxes—Washington does not have an income tax). In the recent past general fund expenditures were limited by an initiative of the people that placed a cap on the annual growth in state general fund expenditures. Recently this cap has not affected expenditure growth because revenue growth was well below the cap, thus, not providing enough revenue to fund expenditures above the cap. In Washington, budget balancing is always the biggest and most challenging job of the Governor and Legislature. Desires for spending chronically exceed tax revenue collections. Expenditures for state employee salaries and benefits, state-funded medical care, and education are large shares of the state budget and their costs rise rapidly. These expenditures always seem to outpace available revenues.

Department of Ecology Budget:

In the 2000 to 2007 period the Department of Ecology's total budget has grown. In the early years of this period the budget was stable, as a result of increases in some environmental areas and decreases in others. However, in the last two years of that period it grew significantly. This growth has not occurred in all environmental programs. Changes in the total budget are driven by environmental priorities, political priorities of the Governor and the Legislature, and the overall status of the state's budget.

Shorelands and Environmental Assistance Program Budget:

In the 2000 to 2007 period funding from the federal Coastal Zone Management grant has declined somewhat, especially in real terms when adjusted for inflation. State funding for staffing for the shorelines and coastal zone management portion of the Shorelands Program has also been reduced. State funding for wetlands activities has been cut, however, these cuts have been partially replaced with federal grant funds. And state funding for a wetlands mitigation banking program has been restored and increased recently. Funding for carrying out the Section 401 Water Quality Certification program has been obtained from the state Department of Transportation. The Legislature has appropriated significant funding for a program of grants to local governments to rewrite their shoreline master programs.

Technical Needs

Any special technical knowledge, skills, or equipment are needed to carry out the proposed projects are identified in the corresponding strategies.

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7 • Glossary

CZMA: Coastal Zone Management Act (a federal law).

GHEMP: Grays Harbor Estuary Management Plan.

GMA: Growth Management Act (a Washington State law).

NCMPMS: National Coastal Management Performance Measure System.

NOAA: National Oceanic and Atmospheric Administration.

OCRM: Office of Ocean and Coastal Resource Management, a branch of the National Oceanic and Atmospheric Administration which implements the federal Coastal Zone Management Act.

RCW: Revised Code of Washington (state regulations adopted by state agencies pursuant to a state law (RCW)).

SEPA: State Environmental Policy Act. (a Washington State law).

SMA: Shoreline Management Act (a Washington State law).

WAC: Washington Administrative Code (state laws enacted by the legislature).